

SEARCHING FOR AN EFFICACIOUS JOINT INVENTORSHIP STANDARD

Abstract: Congress's 1984 amendments to 35 U.S.C. § 116 lowered the bar for establishing joint inventorship of a patent, but did not clarify the uncertainty inherent in joint inventorship law. The crux of this uncertainty is the ability of a person to become a joint inventor because of a minor contribution to an invention and, thus, to obtain ownership rights commensurate with those of more significant contributors. This circumstance obscures the respective rights of researchers, enables dubious legal arguments regarding those rights, mandates unnecessary legal involvement in the research process, and inhibits research collaboration. This Note reviews current joint inventorship and joint ownership law and evaluates potential reforms. The Note concludes that a judicial "matrix approach" to joint inventorship, incorporating clear rules adapted to specific contextual concerns, would best achieve the policies and goals of patent law.

INTRODUCTION

In patent law, joint inventorship is a notoriously slippery concept.¹ Who really knows how to partition accurately the mental achievements of two brainstorming inventors? How can a court distinguish the contributions of a true collaborator from the suggestions of an able associate whose ideas nevertheless do not materially advance the inventor's idea?² Not surprisingly, the law of joint inventorship has always had vague guidelines, attaching legal significance to an abstract event, adhering to a metaphysical standard that deems an

¹ *Mueller Brass Co. v. Reading Indus.*, 352 F. Supp. 1357, 1372 (E.D. Pa. 1972) (describing joint inventorship as "one of the muddiest concepts in the muddy metaphysics of patent law"); DONALD S. CHISUM, CHISUM ON PATENTS § 2.02[2], at 2-4 to 2-5 (release no. 81 Dec. 2001); see Fritz Fasse, *The Muddy Metaphysics of Joint Inventorship: Cleaning Up After the 1984 Amendments to 35 U.S.C. § 116*, 5 HARV. J.L. & TECH. 153, 153 (1992); see also Gary A. Clark & Jeannine L. Hayes, *Out of Joint*, L.A. DAILY J., Apr. 24, 1997, at S8; Robert J. Lauson & Bruce B. Brunda, *Federal Court Decisions Attempt to Settle Joint Inventorship Questions*, NAT'L L.J., Oct. 31, 1994, at C12; Jeffrey G. Sheldon & Danton K. Mak, *What Contributions Make You a 'Joint Inventor'?*, L.A. DAILY J., Oct. 16, 1994, at 7.

² See CHISUM, *supra* note 1, § 2.02[2], at 2-4 to 2-5; Fasse, *supra* note 1, at 153, 160-61, 206-07; see also Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Sheldon & Mak, *supra* note 1, at 7.

inventor's "moment of conception" the badge of inventorship.³ These types of rules have often been difficult to apply.⁴ Yet, courts have long required a minimum threshold of contribution to qualify as a joint inventor: one had to contribute in an original manner to the conception of an idea, not merely exhibit the knowledge of one skilled in an inventive art.⁵ Then, in 1984, Congress amended 35 U.S.C. § 116, which deals with the naming of joint inventors, and made it easier to include members of a large research team as joint inventors on a patent.⁶ In so doing, it lowered the bar for joint inventorship status but did not clarify any of the inherent uncertainty in joint inventorship law.⁷ At the same time, no change was made to 35 U.S.C. § 262, the separate section concerning joint ownership of patents.⁸ Under that provision, joint inventors each receive an equal bundle of ownership rights, regardless of the quality or quantity of their contributions to the patented subject matter.⁹ Joint owners each own an undivided share in the whole patent as tenants in common.¹⁰ Joint owners may unilaterally license or assign their interest in the patent without accounting to other owners.¹¹ Furthermore, because all joint owners are necessary parties to a suit for patent infringement and may not be involuntarily joined, a joint owner can essentially prevent other joint

³ See CHISUM, *supra* note 1, § 2.02[2], at 2-4 to 2-5; Fasse, *supra* note 1, at 153, 160-61, 206-07; see also Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Sheldon & Mak, *supra* note 1, at 7.

⁴ See Mueller, 352 F. Supp. at 1372; Fasse, *supra* note 1, at 153; see also Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Sheldon & Mak, *supra* note 1, at 7.

⁵ See CHISUM, *supra* note 1, § 2.02[2], at 2-5 to 2-7 (providing a general description of the requirements for joint invention and a range of historical cases).

⁶ See 35 U.S.C. § 116 (2000); 130 CONG. REC. 28,073 (1984) (statement of Rep. Kastenmeier).

⁷ See *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1469 (Fed. Cir. 1998); Fasse, *supra* note 1, at 153.

⁸ See 35 U.S.C. § 262.

⁹ See *id.*

¹⁰ See *Ethicon*, 135 F.3d at 1465-66; Robert P. Merges & Lawrence A. Locke, *Co-Ownership of Patents: A Comparative and Economic View*, 72 J. PAT. & TRADEMARK OFF. SOC'Y 586, 586-87 (1990).

¹¹ 35 U.S.C. § 262. An assignment of patent rights often occurs when an employee is obligated, pursuant to an agreement prior to any patentable work, to give all patent rights to an employer. An assignment entails a conveyance of the entire interest in the patent. On the other hand, a license is a contractual agreement, usually consummated after the patent issues, which carves out a lesser interest in the patent, perhaps licensing a particular use of the patented invention. An important difference is the ability to sublicense further—an assignee owns the patent and so is free to license at will, whereas a licensee is bound by the terms of the license, which typically will not allow a sublicense without the licensor's consent.

owners from suing an infringer.¹² Lax joint inventorship rules, a result of the 1984 amendments, now coexist with polar joint ownership rules, which Congress left unchanged.¹³ Thus, the crux of the controversy over joint inventorship doctrine is the following inequity: under current law, a person may become a joint inventor because of a minor contribution to an invention, yet obtain ownership rights commensurate with every other joint inventor on the patent.¹⁴

What are the consequences of this situation? Given the minimal and rather vague, thus unpredictable, standards for determining inventorship, the current state of the law fosters uncertainty and apprehension regarding the contributions of various researchers or team members participating in the inventive process.¹⁵ In recent years, a claim of joint inventorship has become an attractive option for disgruntled scientists suing either their former research partners or former employers.¹⁶ Likewise, defendants accused of infringement might endeavor to find an unnamed, overlooked and minor contributor to defeat a claim of infringement.¹⁷ This tactic is twofold: the unnamed contributor, if found to be a valid joint inventor and joint owner, can either refuse to join the suit or can grant a license to the defendant to continue using the patented technology and thus defeat the suit;¹⁸ alternatively, the defendant can assert that the patent is invalid for failing to name the correct inventors.¹⁹ Thus, the very purpose of the

¹² See *Ethicon*, 135 F.3d at 1467-68; Dale L. Carlson & James R. Barney, *The Division of Rights Among Joint Inventors: Public Policy Concerns After Ethicon v. U.S. Surgical*, 39 IDEA 251, 260 (1999).

¹³ See *Ethicon*, 135 F.3d at 1468, 1471-72; Carlson & Barney, *supra* note 12, at 253, 263, 266.

¹⁴ See, e.g., *Ethicon*, 135 F.3d at 1469-71; Carlson & Barney, *supra* note 12, at 263; Rochelle Cooper Dreyfuss, *Collaborative Research: Conflicts on Authorship, Ownership, and Accountability*, 53 VAND. L. REV. 1161, 1211-14 (2000).

¹⁵ See, e.g., Lawrence Sung, *Collegiality and Collaboration in the Age of Exclusivity*, 3 DEPAUL J. HEALTH CARE L. 411, 438-39 (2000); see Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Antonio Regalado, *Research, Red Ink: An Academic Group Seeks Balance*, WALL ST. J., Jan. 14, 2002, at B4; Sheldon & Mak, *supra* note 1, at 7.

¹⁶ Philip Konecny, Comment, *Windfall Property Rights for the Left Out Co-Inventor Who Gets Let into the Patent*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J., 141, 172-73 (1999); see *Ethicon*, 135 F.3d at 1472; Sung, *supra* note 15, at 435. Most of the cases cited in this Note deal with such a suit.

¹⁷ Konecny, *supra* note 16, at 173; see *Ethicon*, 135 F.3d at 1468, 1472; see also James R. Barney & Dale L. Carlson, "Uncorrectability" as an Affirmative Defense Against Patent Infringement: Managing the Burden of Proof, 8 FED. CIR. B.J. 23, 33 (1999).

¹⁸ See *Ethicon*, 135 F.3d at 1468, 1472; Barney & Carlson, *supra* note 17, at 33; Konecny, *supra* note 16, at 173.

¹⁹ 35 U.S.C. § 102(f) (2000); see *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1350-51 (Fed. Cir. 1998) (if patentee does not claim relief under 35 U.S.C. § 256, court should hold pat-

1984 amendments has been turned on its ear—refurbished § 116, designed to encourage team research, may now be impeding it.²⁰

This Note discusses the current law of joint inventorship and how it might be modified to solve this problem and to promote collaborative research more effectively. Part II.A. focuses on the three sections of the patent code that are the primary source of the law on joint inventorship and joint ownership.²¹ It also examines interpretive case law for each provision. Part II.A.1. discusses § 116, which allows for naming joint inventors on a patent.²² Part II.A.1. also discusses the important amendments made to § 116 in 1984.²³ Part II.A.2. discusses 35 U.S.C. § 256, which allows a court to order the correction of an issued patent by adding, deleting, or modifying the named inventors.²⁴ Part II.A.3. discusses § 262, which grants extensive rights to joint owners of a patent.²⁵ Part II.B. describes in detail the seminal case *Ethicon, Inc. v. U.S. Surgical*, which created much of the existing joint inventorship problem.²⁶ Part II.C. explores the ramifications of *Ethicon* and the effect of the problem on collaborative research.²⁷ Part II.D. summarizes the types of solutions that have been proposed.²⁸ Part III.A. argues that amending joint inventorship rules is a better solution than amending joint ownership rules.²⁹ Finally, Part III.B. explores the most efficacious form of joint inventorship rules.³⁰

ent invalid for failure to comply with 35 U.S.C. § 102(f)); *Jamesbury Corp. v. United States*, 518 F.2d 1384, 1395 (Ct. Cl. 1975) (inclusion of more or less than the true inventors in patent renders it void); *Anax Fly Ash Corp. v. United States*, 514 F.2d 1041, 1050 (Ct. Cl. 1975); *Barney & Carlson*, *supra* note 17, at 24. An error in inventorship may sometimes be corrected pursuant to 35 U.S.C. § 256. *See* 35 U.S.C. § 256; *Pannu*, 155 F.3d at 1350.

²⁰ *See* *Sung*, *supra* note 15, at 439.

²¹ *See infra* notes 31–151 and accompanying text.

²² *See infra* notes 38–110 and accompanying text.

²³ *See infra* notes 38–110 and accompanying text.

²⁴ *See infra* notes 111–138 and accompanying text.

²⁵ *See infra* notes 139–151 and accompanying text.

²⁶ *See infra* notes 152–187 and accompanying text.

²⁷ *See infra* notes 188–223 and accompanying text.

²⁸ *See infra* notes 224–264 and accompanying text.

²⁹ *See infra* notes 265–308 and accompanying text.

³⁰ *See infra* notes 309–373 and accompanying text.

I. BACKGROUND

A. *Law of Joint Inventorship and Joint Ownership*

Whoever invents patentable subject matter is entitled to a patent thereon.³¹ This principle derives from the U.S. Constitution's grant of Congressional authority "[t]o promote the progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."³² When an invention is made by two or more persons jointly, they must apply for a patent jointly.³³ The law of joint inventorship and ownership is embodied primarily in three sections of Title 35 of the U.S. Code:³⁴ § 116 deals with the definition of joint inventors;³⁵ § 256 allows for the correction of a patent which improperly names or omits an inventor;³⁶ § 262 concerns joint ownership of patents.³⁷

1. 35 U.S.C. § 116—Joint Inventorship

Joint inventorship is governed by 35 U.S.C. § 116, which indicates in pertinent part:

When an invention is made by two or more persons jointly, they shall apply for a patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.³⁸

³¹ 35 U.S.C. § 101; *Hess v. Advanced Cardiovascular Sys.*, 106 F.3d 976, 979 (Fed. Cir. 1997).

³² U.S. CONST. art I, § 8, cl. 8.

³³ 35 U.S.C. § 116.

³⁴ *Id.* §§ 116, 256, 262. For a further discussion of joint inventorship, and particularly the 1984 amendments to §§ 116 and 103, see Fasse, *supra* note 1.

³⁵ 35 U.S.C. § 116.

³⁶ *Id.* § 256.

³⁷ *Id.* § 262.

³⁸ *Id.* § 116. The scope of protected intellectual property in a patent is defined by the claims. There is no limit to the allowable number of claims, though many are duplicative in coverage but contain slightly varying language to provide reliable protection. See U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 706.03(k) (8th ed. 2001) [hereinafter MANUAL].

This section provides no explicit quantitative or qualitative lower limit to the amount of inventive contribution required to qualify one as a joint inventor.³⁹ As the statutory text implies, a joint inventor is only required to perform part of the task that produces the invention and to contribute to one claim.⁴⁰

The test for inventorship under § 116 turns on the notion of an inventor's "conception."⁴¹ One leading writer has supplied the following easy-to-read, difficult-to-apply articulation of the joint inventorship standard: "joint invention occurs when two or more persons, collaborating together, each contribute to the conception of the solution to a problem which constitutes the invention."⁴² Therefore, only where a single, unitary idea is the product of two or more minds, working in communication with one another, is the conception truly joint.⁴³ As courts have emphasized, "[C]onception is the touchstone of inventorship."⁴⁴ "Conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice."⁴⁵ An inventor need not

³⁹ *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997); *Burroughs Wellcome Co. v. Barr Lab.*, 40 F.3d 1223, 1227 (Fed. Cir. 1994); see 35 U.S.C. § 116.

⁴⁰ See *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998). In fact, contributing to the invention of one disclosed means of a means-plus-function claim qualifies one as a joint inventor, unless the means was simply a perfunctory reduction to practice of the sole inventor's broader concept. See *Winbond Elec. Corp. v. Int'l Trade Comm'n*, 262 F.3d 1363, 1372 (Fed. Cir. 2001); *Ethicon*, 135 F.3d at 1463; see also *Sewall v. Walters*, 21 F.3d 411, 416 (Fed. Cir. 1994) (holding designer of one disclosed means was not joint inventor because inventive aspect of claim did not encompass particular means for reducing it to practice). A means-plus-function claim describes an invention in terms of the function performed rather than structure. Alternate means for performing that function are disclosed in the specification of the patent; the patent protects these alternate methods and their equivalents. An example might be "means for attaching two surfaces." This claim would protect the invention regardless of the "means" used for attachment—the surfaces could be glued, taped, nailed, screwed together, and so on. See 35 U.S.C. § 112 ¶ 6; see also, e.g., *Ethicon*, 135 F.3d at 1462–64 (providing examples of means-plus-function claims and explaining the significance of a means-plus-function claim in the context of joint inventorship). See generally CHISUM, *supra* note 1, § 18.03[5].

⁴¹ See *Ethicon*, 135 F.3d at 1460; *Fina*, 123 F.3d at 1473; *Burroughs*, 40 F.3d at 1227–28.

⁴² CHISUM, *supra* note 1, § 2.02[2], at 2–5. This definition of joint inventorship summarizes the law of many older inventorship cases. *Fasse*, *supra* note 1, at 160–61, n.39.

⁴³ See CHISUM, *supra* note 1, § 2.02[2], at 2–5 n.3 (quoting 1 WILLIAM C. ROBINSON, *THE LAW OF PATENTS FOR USEFUL INVENTIONS* § 396 (1890)).

⁴⁴ *Acromed Corp. v. Sofamor Danek Group, Inc.*, 253 F.3d 1371, 1379 (Fed. Cir. 2001); *Ethicon*, 135 F.3d at 1460; *Fina*, 123 F.3d at 1473; *Burroughs*, 40 F.3d at 1227–28.

⁴⁵ *Ethicon*, 135 F.3d at 1460 (quoting ROBINSON, *supra* note 43, § 532). The inventive process is said to comprise both conception and reduction to practice. Conception is the mental act of formulating an idea, particular and definite. Reduction to practice is the process of transforming an intangible idea into a working physical reality. *Ethicon*, 135 F.3d at 1460. Filing a proper patent application with the U.S. Patent and Trademark Office

know an invention will work in practice to achieve conception—realizing a working invention is part of the separate step of reduction to practice.⁴⁶ Accordingly, each person claiming to be a joint inventor must contribute to the conception of the invention.⁴⁷ The contribution must be significant and inventive; merely explaining well-known principles or the current state of the art does not make one a joint inventor.⁴⁸ Conception is complete when an idea is sufficiently definite and permanent such that one with ordinary skill in the art could reduce it to practice.⁴⁹ Because completed conception connotes completed invention, one who merely exhibits ordinary skill in the art and reduces an invention to practice after conception is not a joint inventor.⁵⁰ Similarly, exhibiting ordinary skill in performing tests or experiments, assisting the sole inventor, or acting at the sole inventor's specific instructions does not qualify one as a joint inventor.⁵¹ In

(USPTO) is considered constructive reduction to practice—that is, a patent application that properly discloses an invention is considered to have been conceived and reduced to practice, regardless of whether the inventor made, or ever makes, the invention. *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986). Courts have also referred to the doctrine of “simultaneous conception and reduction to practice,” albeit sparingly, for cases involving experimental sciences. In a field such as pharmaceutical research, researchers often cannot discern the feasibility of an idea until after conducting rounds of testing and reducing the invention to practice. Conception is not considered complete, under this theory, until experimentation proves out the concept. But this does not mean a purported inventor must always wait until experimentation—a sufficiently definite and permanent idea—before testing is sometimes enough to connote inventorship. See *Burroughs*, 40 F.3d at 1228–29. Arguably, this standard of “simultaneous” conception and reduction to practice should be applied to the biomedical and other experimental fields, whereas the usual standard requiring a “definite and permanent idea” ought to be restricted to predictive or engineering sciences. See generally Jackie Hutter, Note, *A Definite and Permanent Idea? Invention in the Pharmaceutical and Chemical Science and the Determination of Conception in Patent Law*, 28 J. MARSHALL L. REV. 687 (1995) (exploring the advantages of the simultaneous reduction to practice doctrine in the pharmaceutical industry). For a discussion on the level of “conceptual specificity” needed to connote inventorship, see generally David W. Carstens, *Joint Inventorship Under 35 U.S.C. § 116*, 73 J. PAT. & TRADEMARK OFF. SOC'Y 616 (1991) (proposing conceptual specificity as a requirement for joint inventorship).

⁴⁶ *Burroughs*, 40 F.3d at 1228.

⁴⁷ *Acromed*, 253 F.3d at 1379; *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998); *Fina*, 123 F.3d at 1473; see *Ethicon*, 135 F.3d at 1460.

⁴⁸ *Acromed*, 253 F.3d at 1379; see *Ethicon*, 135 F.3d at 1460; *Hess*, 106 F.3d at 981.

⁴⁹ *Ethicon*, 135 F.3d at 1460; *Burroughs*, 40 F.3d at 1228; *Seawall*, 21 F.3d at 415.

⁵⁰ *Pannu*, 155 F.3d at 1351; *Ethicon*, 135 F.3d at 1460; *Fina*, 123 F.3d at 1473.

⁵¹ *Hess*, 106 F.3d at 981; see *Ethicon*, 135 F.3d at 1460; see also *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 616 (Fed. Cir. 1985) (holding that an inventor may use the services, ideas, and aid of others in the process of perfecting the inventor's inventions without losing the right to a patent).

1998, in *Pannu v. Iolab Corp.*, the U.S. Court of Appeals for the Federal Circuit summarized these requirements:

All that is required is that [the joint inventor] (1) contribute in some significant manner to the conception or reduction to practice of the invention, (2) make a contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention, and (3) do more than merely explain to the real inventors well-known concepts and/or the current state of the art.⁵²

Nevertheless, given this explanation of what it means to conceive of an invention, the law of joint inventorship for patents is relatively unclear.⁵³ The principles just described are difficult to apply—especially for a judge who may be unfamiliar with a particular technology and with what type of contribution might be “significant” in that technology.⁵⁴ Thus, those who contribute very little to an invention may still be considered joint inventors.⁵⁵

In addition, courts have promulgated one further guideline: the requirement of collaboration.⁵⁶ Courts have interpreted § 116 to include a requirement of collaboration between joint inventors, though there is no mandate that joint inventors work together physically or work simultaneously.⁵⁷ To collaborate, joint inventors must be working towards the same end, on the same subject matter, and producing an invention by their aggregate efforts.⁵⁸ In *Pannu*, the Federal Circuit found the inventor of a snag-resistant intraocular lens⁵⁹ to have collaborated with the president of a lens making company, who suggested he use single-piece technology in fabricating his lenses.⁶⁰ The president also supplied the inventor with prototype lenses, which the

⁵² 155 F.3d at 1351.

⁵³ See *Ethicon*, 135 F.3d at 1469–71.

⁵⁴ See *id.*

⁵⁵ See *id.*

⁵⁶ *Fina*, 123 F.3d at 1473; *Burroughs*, 40 F.3d at 1227; *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911, 916–17 (Fed. Cir. 1992).

⁵⁷ *Burroughs*, 40 F.3d at 1227; *Kimberly-Clark*, 973 F.2d at 916–17.

⁵⁸ *Kimberly-Clark*, 973 F.2d at 916; *Monsanto Co. v. Kamp*, 269 F. Supp. 818, 824 (D.D.C. 1967); see also *Credle v. Bond*, 25 F.3d 1566, 1574 (Fed. Cir. 1994) (holding that there can be no collaboration and no joint invention if one inventor conceives and reduces to practice, in non-overlapping time period, before other inventor).

⁵⁹ The intraocular lens at issue was a plastic lens that could, for example, be surgically inserted into the eye to replace a failed natural lens. *Pannu*, 155 F.3d at 1346.

⁶⁰ *Id.* at 1346, 1351.

inventor tested.⁶¹ The snag-resistant features of the lens were already in a patent application before any collaboration, but the inventor then filed a continuation-in-part and added the one-piece technology feature to a claim.⁶² The Federal Circuit found this contact enough to constitute collaboration, even though one inventive step was taken before the other, and contact between the individuals was limited in scope.⁶³

If two parties are wholly unaware of each other's work, however, there can be no collaboration and no joint invention.⁶⁴ In 1992, in *Kimberly-Clark Corp. v. Procter & Gamble Distributing Co.*, the Federal Circuit held that three inventors who worked at the same company and developed very similar products were not joint inventors on the same patent because they were not aware of each other's work.⁶⁵ The defendant in *Kimberly-Clark*, trying to obtain the benefit of an earlier priority date,⁶⁶ argued that the patent in question was the product of a joint invention made by three of its employees, who had done work in different years.⁶⁷ None of the employees knew of each other's work (indeed, one worked at a different facility in Germany) until three or four years after the patent issued.⁶⁸ In rejecting this argument, the Federal Circuit interpreted § 116 to mean that an invention can be made jointly only if two or more persons collaborate in creating it.⁶⁹ The Federal Circuit found no examples of joint behavior, such as one inventor reading a relevant report and building upon it, or hearing another's suggestion at a meeting.⁷⁰

⁶¹ *Id.* at 1346.

⁶² *Id.* A continuation-in-part application is an extension of the application process, allowing an inventor to claim new subject matter in a patent application while retaining the benefit of the same (earlier) filing date for the patent. MANUAL, *supra* note 38, § 201.08, 201.11; RONALD B. HILDRETH, PATENT LAW: A PRACTITIONER'S GUIDE § 4:3.3[C] (3rd ed., release 3, 2001).

⁶³ *See Pannu*, 155 F.3d at 1351.

⁶⁴ *See Kimberly-Clark*, 973 F.2d at 916–17.

⁶⁵ *See id.* at 915–17.

⁶⁶ A priority date is usually the date at which an inventor conceives of an invention, unless the inventor is not diligent in reducing the invention to practice (either by actually making a prototype of the invention or by filing with the USPTO). *See* 35 U.S.C. § 101 (2000); CHISUM, *supra* note 1, § 10.01. If an inventor is not diligent, a second inventor who conceives later but reduces to practice first may be named the inventor. *Id.* In the United States, the first person to invent is legally entitled to a patent, whereas in most other countries the first to file is entitled. *Id.*

⁶⁷ *Kimberly-Clark*, 973 F.2d at 913.

⁶⁸ *Id.*

⁶⁹ *See id.* at 915–17.

⁷⁰ *Id.* at 917.

The legislative history of § 116 provides insight as to why the section has such minimal joint inventorship requirements.⁷¹ Congress last substantially amended § 116 in 1984.⁷² In enacting these amendments, Congress was primarily concerned with accommodating the modern paradigm of the research and development team at a corporation, university, or other large organization.⁷³ Such research teams, particularly in the biomedical industry, are often large in number and develop products that may take years to mature.⁷⁴ As a consequence, researchers may work on a particular project over a long period of time, sometimes sporadically, and each team member's quantitative contributions to the final invention may vary.⁷⁵ With the 1984 amendments, Congress attempted to encourage team research by codifying certain rules existing in the case law and thereby preventing courts from moving in an unfavorable direction.⁷⁶ Specifically, Congress adopted the joint inventorship definition in *Monsanto Co. v. Kamp* and the "non-all-claims" rule in *SAB Industri AB v. Bendix Corp.*⁷⁷

First, to foster communication and collegiality between and within large teams, Congress explicitly adopted the rationale of *Mon-*

⁷¹ See generally Patent Law Amendments Act of 1984, Pub. L. 98-662, § 104(a), 98 Stat. 3383, 3384 (codified at 35 U.S.C. § 116 (2000)); COMM. OF THE JUDICIARY, 98TH CONG., SECTION-BY-SECTION ANALYSIS OF H.R. 6286, PATENT LAW AMENDMENTS ACT OF 1984, 130 CONG. REC. 28,069 (1984), reprinted in 1984 U.S.C.C.A.N. 5827 [hereinafter SECTION-BY-SECTION ANALYSIS].

⁷² 35 U.S.C. § 116; Patent Law Amendments Act § 104(a).

⁷³ SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34; see 130 CONG. REC. 28,073 (1984) (remarks of Rep. Kastenmeier in introducing the bill to the House of Representatives for a vote); 130 CONG. REC. E34,803 (1983) (remarks of Rep. Kastenmeier during drafting of the bill).

⁷⁴ See Sung, *supra* note 15, at 416, 419; see also, e.g., *Burroughs*, 40 F.3d at 1225-27; *Gen. Motors Corp. v. Toyota Motor Co.*, 467 F. Supp. 1142, 1150-51 (S.D. Ohio 1979) [hereinafter *Gen. Motors I*].

⁷⁵ See SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34; see Sung, *supra* note 15, at 438-39.

⁷⁶ See SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34; *Innovation and Patent Law Reform: Hearing on H.R. 3285, H.R. 3286, and H.R. 3605 Before the House Subcomm. on Courts, Civil Liberties and the Admin. of Justice, Comm. on the Judiciary, 98th Cong. 6, 28-29 (1984)* [hereinafter *Hearings*] (testimony of Gerald Mossinghoff, Assistant Secretary & Commissioner of Patents & Trademarks, indicating that contemporary case law requiring that a joint inventor contribute to all claims in a patent was difficult and sometimes impossible to comply with, and recommending passage of the proposed 1984 patent law amendments to change the case law).

⁷⁷ *SAB Industri AB v. Bendix Corp.*, 199 U.S.P.Q. (BNA) 95, 104 (E.D. Va. 1978); *Monsanto*, 269 F. Supp. at 824; SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34.

santo, a leading case on joint inventorship from 1967.⁷⁸ In that case, the U.S. District Court for the District of Columbia confronted the question of whether defendants Kamp and Jahn were proper joint inventors for a patent on a polyethylene lined plastic bottle.⁷⁹ Kamp owned and actively managed the business and employed Jahn as a chemist.⁸⁰ The two men each had their own laboratory and conducted experimental work.⁸¹ According to their collective recollection, Jahn conducted the majority of the experimental work, but Kamp conducted some experiments as well.⁸² More often, Jahn would report some of his findings to Kamp, and Kamp frequently made suggestions to him.⁸³ In finding the two proper joint inventors, the court articulated a now famous standard for joint inventorship:

Each needs to perform but a part of the task if an invention emerges from all of the steps taken together. It is not necessary that the entire inventive concept should occur to each of the joint inventors, or that the two should physically work together. One may take a step at one time, the other an approach at different times. One may do more of the experimental work while the other makes suggestions from time to time. The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another, does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem.⁸⁴

The *Monsanto* court's description of what was *not* required to become a joint inventor was essentially adopted in the 1984 amendments without substantive modification.⁸⁵ Note the inherently vague nature of this approach—by describing only that which does not disqualify one from joint inventorship, the criteria provide little guidance as to

⁷⁸ *Monsanto*, 269 F. Supp. at 824; SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34.

⁷⁹ *Monsanto*, 269 F. Supp. at 824. The defendant's patent was challenged as invalid for failure to name the proper inventors.

⁸⁰ *Id.* at 825.

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Monsanto*, 269 F. Supp. at 824.

⁸⁵ See Patent Law Amendments Act of 1984, Pub. L. 98-662, § 104(a), 98 Stat. 3383, 3384 (codified at 35 U.S.C. § 116 (2000)); *Monsanto*, 269 F. Supp. at 824; SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34.

what *does* qualify one for joint inventorship.⁸⁶ The *Monsanto* court did provide some positive requirements for finding joint inventorship, including that joint inventors each collaborate and contribute to the inventive thought and final result.⁸⁷ These positive criteria, for unstated reasons, were not adopted.⁸⁸ Congress seems to have been reluctant to promulgate specific standards for joint inventorship lest a court omit a bona fide inventor from a patent for failure to meet rigid statutory requirements.⁸⁹ In adopting *Monsanto*, Congress also implicitly rejected the more narrow contemporary rule of the 1981 case *General Motors Corp. v. Toyota Motor Corp.*, in which the U.S. Court of Appeals for the Sixth Circuit had formulated a test equating "working under the aegis of one employer" to joint inventorship.⁹⁰ In that case, General Motors sued Toyota for infringement of a catalytic converter patent.⁹¹ General Motors' engineers developed the catalytic converter working sporadically over a period of years.⁹² Toyota argued that General Motors' patent was invalid because the converter was developed in three stages, different engineers working on each stage, and that the prior stages constituted disabling prior art to the final patent.⁹³

⁸⁶ See 35 U.S.C. § 116; Patent Law Amendments Act of 1984 § 104(a); *Monsanto*, 269 F. Supp. at 824.

⁸⁷ See Patent Law Amendments Act of 1984 § 104(a); *Monsanto*, 269 F. Supp. at 824.

⁸⁸ See SECTION-BY-SECTION ANALYSIS, *supra* note 71, at 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34.

⁸⁹ *Cf. id.*

⁹⁰ See *Gen. Motors Corp. v. Toyota Motor Co.*, 667 F.2d 504, 506-07 (6th Cir. 1981) [hereinafter *Gen. Motors II*]; SECTION-BY-SECTION ANALYSIS, *supra* note 71, at 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34; see also Fasse, *supra* note 1, at 186-87 (discussing the significance of Congressional rejection of *Gen. Motors II*).

⁹¹ *Gen. Motors II*, 667 F.2d at 505.

⁹² *Id.* at 506; *Gen. Motors I*, 467 F. Supp. at 1150-51.

⁹³ *Gen. Motors II*, 667 F.2d at 506. The patentability of an invention is evaluated in the context of prior art, which is the body of existing knowledge at the time of the invention. Of course, an invention is not patentable if, in light of the prior art, it is "obvious" to one skilled in the art. 35 U.S.C. § 103 (2000). Under the law at the time, an invention was unpatentable if a patentee's prior invention rendered the present invention obvious. *In re Clemens*, 622 F.2d 1029, 1038 (C.C.P.A. 1980); *In re Bass*, 474 F.2d 1276, 1285-86, 1288 (C.C.P.A. 1973). Recognizing that team research often produces a number of related inventions, team members contributing varying amounts to each, Congress desired to eliminate from consideration prior art that was simply a result of prior work either by the inventor or the research team. Congress amended 35 U.S.C. § 103 to disqualify these kinds of prior art (those falling under 35 U.S.C. § 102(f) and (g)) from consideration in determining patentability. See 35 U.S.C. §§ 102, 103(c); Patent Law Amendments Act of 1984, Pub. L. 98-662, § 103, 98 Stat. 3383, 3384 (codified at 35 U.S.C. § 116 (2000)); SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34. This was yet another 1984 amendment Congress made to encourage team research. See also Fasse, *supra* note 1, at 167-70 (providing further discussion of these amendments).

The court rejected this argument, stating that the numerous inventors had all worked "under the aegis of a common employer towards a common goal," and thus were considered part of the inventive process.⁹⁴ Under the circumstances, the Sixth Circuit thought it unrealistic to require that joint inventors work side by side and that each step be taken by all the company's collaborators.⁹⁵ The court viewed the development of the catalytic converter as one long process and found every engineer who participated was eligible to be a joint inventor.⁹⁶ Congressional rejection of the rationale of this case, not even including it as a non-requisite positive criterion, again indicates a reluctance to provide more specific guidelines to the court for determining joint inventorship—rather, Congress seemed content to emphasize that the minimum threshold for inventorship must accommodate team research.⁹⁷

Congress's second adoption from contemporary case law was an explicit endorsement of the rationale of *SAB Industri AB* and its "non-all-claims" rule.⁹⁸ Prior to 1984, some courts required that a purported joint inventor contribute to the subject matter of all the claims in the patent.⁹⁹ In 1978, in *SAB Industri AB*, the U.S. District Court for the Eastern District of Virginia stated in dicta that neither the statute nor U.S. Patent and Trademark Office (USPTO) regulations required a joint inventor to contribute to every claim in a patent.¹⁰⁰ Rather, contribution to just one claim was enough.¹⁰¹ Congress saw the "all-claims" rule as a considerable obstacle to team research, because many team members made small but significant contributions that,

⁹⁴ *Gen. Motors II*, 667 F.2d at 507.

⁹⁵ *Id.*

⁹⁶ *See id.*

⁹⁷ *See* SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, *reprinted in* 1984 U.S.C.C.A.N. at 5834.

⁹⁸ *SAB Industri AB*, 199 U.S.P.Q. at 95, 104; SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, *reprinted in* 1984 U.S.C.C.A.N. at 5833-34.

⁹⁹ *See Hearings, supra* note 76, at 6, 28-29, 157-58 (testimony of Gerald Mossinghoff, Assistant Secretary & Commissioner of Patents & Trademarks and statement of Professor Herbert F. Schwarz from the University of Pennsylvania); *Fasse, supra* note 1, at n.145 (citing *Stewart v. Tenk*, 32 F. 665 (C.C.S.D. Ill. 1887); *Worden v. Fisher*, 11 F. 505 (C.C.E.D. Mich. 1882); *Rival Mfg. Co. v. Dazey Prods. Co.*, 358 F. Supp. 91, 101 (W.D. Mo. 1973) (in favor of the rule requiring contribution to all claims); *In re Sarett*, 327 F.2d 1005 (C.C.P.A. 1964); and contrasting *Vekamaf Holland B.V. v. Pipe Benders, Inc.*, 211 U.S.P.Q. (BNA) 955, 966 (D. Minn. 1981); *SAB Industri AB*, 199 U.S.P.Q. (BNA) at 95 (against the "all-claims" rule)).

¹⁰⁰ *See SAB Industri AB*, 199 U.S.P.Q. at 104.

¹⁰¹ *See id.*; SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, *reprinted in* 1984 U.S.C.C.A.N. at 5833-34.

through the imprecise artifice of claim drafting, were not captured in every claim.¹⁰² The all-claims rule hindered team research by discouraging small contributions to a project.¹⁰³ With the abandonment of the all-claims rule, Congress clearly lowered the bar for joint inventorship.¹⁰⁴ Though adopting a non-all-claims rule, Congress did emphasize its conceptual limit—if a particular feature of an invention is actually a separate invention, then the joint inventors should not include it in the claims of one patent, or attempt to patent it as a joint invention.¹⁰⁵ Pursuant to 35 U.S.C. § 121, a patent application may only contain one invention.¹⁰⁶ If a patent application discloses two inventions, it is subject to a restriction requirement, whereby the original patent application is “restricted” to one of the inventions.¹⁰⁷ The remaining invention becomes the subject of a “divisional” application and patentability is pursued separately.¹⁰⁸ Thus applicants place the inventions in two separate patents, the inventors of each separate invention listed only on the patent to which they contributed.¹⁰⁹ Each patent should truly embody not two but one single invention—the product of joint inventors.¹¹⁰

2. 35 U.S.C. § 256—Correction of Named Inventor

If an issued patent is found to name an incorrect person (misjoinder) or omit an inventor (nonjoinder), 35 U.S.C. § 256 permits either the Commissioner of the USPTO or the federal courts to correct the error.¹¹¹ The correction could be the addition of an inventor, the deletion of an individual, or the complete substitution of one inventor for another.¹¹² The statutory language indicates this action may

¹⁰² See SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34; 130 CONG. REC. E34,803 (1983) (remarks of Rep. Kastenmeier during drafting of the bill).

¹⁰³ See SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833-34.

¹⁰⁴ See *id.*

¹⁰⁵ See *id.*

¹⁰⁶ 35 U.S.C. § 121 (2000).

¹⁰⁷ See *id.* A restriction requirement occurs when a Patent Examiner determines that a patent application actually describes two inventions. The inventor restricts the application to only one of the invention and files a separate application for the remaining invention. MANUAL, *supra* note 38, §§ 802-803.

¹⁰⁸ See 35 U.S.C. § 121; MANUAL, *supra* note 38, §§ 802-803.

¹⁰⁹ See 35 U.S.C. § 121.

¹¹⁰ See *id.*

¹¹¹ See *id.* § 256.

¹¹² *Stark v. Advanced Magnetics, Inc.*, 119 F.3d 1551, 1555-56 (Fed. Cir. 1997).

be taken "[w]henever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part."¹¹³ Significantly, courts interpret the word "error" to connote any error, including deliberate acts or honest mistakes.¹¹⁴ Therefore, even purposeful omissions (presumably by the named inventors), if the omitted inventor does not know about it, still fall under the definition of an "error."¹¹⁵ The unnamed inventor, though, must have acted "without any deceptive intention."¹¹⁶ If it can be corrected under § 256, the patent is not invalid for erroneously naming the improper inventors when it was issued.¹¹⁷ The statute is quite liberal in application—a patent can usually be corrected.¹¹⁸ If the validity of a patent is challenged in court (by the defendant in an infringement suit who produces an alleged joint inventor and shows by clear and convincing evidence that the joint inventor should be named on the patent), the patentee (the plaintiff) has the burden of proving by clear and convincing evidence that the unnamed joint inventor acted without deceptive intent, and that, therefore, the patent can be corrected.¹¹⁹ But in this regard, good faith, or the absence of deceptive intent, on the part of the unnamed inventor is presumed.¹²⁰ The patentee must make a motion to correct the patent and the court then orders correction pursuant to § 256.¹²¹ The correction is not automatic.¹²² The only prerequisites to a § 256 action are notice and an opportunity to be heard.¹²³ There is no requirement of consent on the part of the named inventors, or of diligence on the part of the unnamed inventor seeking correction.¹²⁴

¹¹³ 35 U.S.C. § 256.

¹¹⁴ See *Stark*, 119 F.3d at 1554–55.

¹¹⁵ See *id.*

¹¹⁶ See *id.* at 1555.

¹¹⁷ 35 U.S.C. § 256.

¹¹⁸ *Id.*

¹¹⁹ See *Pannu*, 155 F.3d at 1350–51.

¹²⁰ See *id.* at 1351 n.4. The Federal Circuit is not entirely clear on exactly how the presumption of good faith comports with the patentee's burden of proof—it seems, at a minimum, the patentee must make a perfunctory assertion of good faith, then in the absence of contradicting evidence, ask for correction of the patent under § 256. See *Barney & Carlson*, *supra* note 17, at 29.

¹²¹ *Pannu*, 155 F.3d at 1350–51.

¹²² *Id.* at 1350.

¹²³ *Stark*, 119 F.3d at 1553.

¹²⁴ *Id.* at 1553–54; *Stark v. Advanced Magnetics, Inc.*, 29 F.3d 1570, 1575 (Fed. Cir. 1994).

Courts presume the named inventors on a patent are correct and the burden of showing misjoinder or nonjoinder is a heavy one, which must be proven by clear and convincing evidence.¹²⁵ This rule follows from the understanding that the temptation is too great for even honest witnesses to reconstruct events and their states of mind in a way favorable to themselves, especially when those events occurred years beforehand.¹²⁶ Therefore, in addition to the alleged inventor's testimony, corroborating evidence is required.¹²⁷ Corroborating evidence can take the form of documents, contemporaneous disclosures of information, or testimony of persons other than the alleged joint inventor.¹²⁸ The evidence may be direct or circumstantial and is evaluated in context by the trial court, making credibility determinations necessary to determine if, overall, the claim of joint inventorship is credible.¹²⁹ As a result of this comprehensive examination, corroboration is not required for every single factual issue that the parties contest.¹³⁰ A case illustrative of a borderline level of corroboration is *Virginia Electronic & Lighting Corp. v. National Service Industries*, decided in 2000.¹³¹ In *Virginia Electronic*, the Federal Circuit held that prototypes sent by the alleged inventor (the plaintiff) and oral testimony of a third party were sufficient to corroborate a § 256 claim of joint inventorship for a light-emitting-diode (LED) lamp.¹³² Under the terms of a confidentiality agreement, the alleged inventor sent prototype lamps to the defendant, who employed the named inventor.¹³³ A few months later, the defendant applied for a patent on certain features for LED lamps.¹³⁴ The alleged inventor's evidence consisted of his own testimony, the prototype lamps sent to the defendant, and the testimony of a third party who supplied lamps to the alleged inventor (but who, distressingly, then testified that the third party had actually made the invention).¹³⁵ The court stated that the sufficiency of the evidence was a "very close question," but held that, crediting all inferences in favor

¹²⁵ 35 U.S.C. § 282 (2000); *Acromed*, 253 F.3d at 1379; *Ethicon*, 135 F.3d at 1460; *Hess*, 106 F.3d at 980.

¹²⁶ See *Hess*, 106 F.3d at 980.

¹²⁷ *Acromed*, 253 F.3d at 1379; *Ethicon*, 135 F.3d at 1461; *Hess*, 106 F.3d at 980.

¹²⁸ *Ethicon*, 135 F.3d at 1461.

¹²⁹ *Id.* at 1464.

¹³⁰ *Id.*

¹³¹ See generally *Va. Elec. & Lighting Corp. v. Nat'l Serv. Indus.*, 230 F.3d 1377, 2000 WL 12729 (Fed. Cir. 2000).

¹³² *Id.* at *5-6.

¹³³ *Id.* at *1-2.

¹³⁴ *Id.* at *2.

¹³⁵ *Id.* at *5.

of the plaintiff, the evidence was sufficient to reverse the district court's summary judgment decision for the defendant.¹³⁶ The court noted that it was not clear whether the lamps actually contained the features at issue, but this uncertainty and the third party claiming to be the inventor both created genuine issues of material fact.¹³⁷ The court also highlighted relevant circumstantial evidence: (1) the defendant approaching the plaintiff to be a vendor for the lamps, (2) the plaintiff's experience in the lighting industry, (3) the informal business relationship between the two, (4) the absence of compensation to the plaintiff for the work on the lamps, and (5) the similarities between the plaintiff's drawings and the patent figures.¹³⁸

3. 35 U.S.C. § 262—Patent Ownership

The language of 35 U.S.C. § 262 grants broad powers to each joint owner of a patent:

In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use, offer to sell, or sell the patented invention within the United States, or import the patented invention into the United States, without the consent of and without accounting to the other owners.¹³⁹

The law of joint inventorship, as discussed above in Part II.A.1., provides a low and uncertain threshold for becoming a joint inventor.¹⁴⁰ Nevertheless, as is clear from the plain text of § 262, the law of joint ownership is not graduated: joint inventors receive a complete bundle of ownership rights regardless of the quality or quantity of their contribution to the inventive subject matter.¹⁴¹ Joint owners each own an undivided share in the whole patent.¹⁴² Joint owners may unilaterally license or assign their interest in the patent without accounting to other owners.¹⁴³ One rationale for this view is that if joint owners were required to account to each other, there would exist a disincentive to

¹³⁶ *Var. Elec.*, 2000 WL 12729, at *5.

¹³⁷ *Id.* at *5–6.

¹³⁸ *Id.* at *7.

¹³⁹ 35 U.S.C. § 262 (2000).

¹⁴⁰ See *Ethicon*, 135 F.3d at 1469–71.

¹⁴¹ See 35 U.S.C. § 262.

¹⁴² *Ethicon*, 135 F.3d at 1465.

¹⁴³ 35 U.S.C. § 262. For a comparison of joint ownership law in the United States with the law in other countries, and an economic evaluation of U.S. law (particularly provisions for accounting to other joint tenants), see generally Merges & Locke, *supra* note 10.

utilize the patent because part of the profits would be siphoned off to other joint owners who had done no work.¹⁴⁴ In effect, the rule would create "free-riders" who do not seek to advance or commercialize the technological development.¹⁴⁵ On the other hand, it has been argued that because a joint inventor can freely (or indiscriminately) license the entire patent, the current rule does create a disincentive to collaborate.¹⁴⁶ Another principle of joint ownership is that an action for infringement must join all joint owners of a patent as plaintiffs.¹⁴⁷ This rule protects the rights of all patent joint owners (because, for instance, a court could invalidate the patent), prevents infringers from multiple lawsuits, and protects licensees from harassing lawsuits by other joint owners.¹⁴⁸ Because all joint owners of a patent are necessary parties to a suit for patent infringement and may not be involuntarily joined,¹⁴⁹ a joint owner can prevent other joint owners from suing an infringer.¹⁵⁰ Patent joint owners are essentially "at the mercy" of one another.¹⁵¹

B. *The Ethicon Case*

In 1998, in the seminal case *Ethicon, Inc. v. U.S. Surgical Corp.*, the Federal Circuit issued a troubling split decision that stirred debate over the efficacy of current joint inventorship and joint owner law.¹⁵²

¹⁴⁴ See Merges & Locke, *supra* note 10, at 593-94 (discussing the view espoused in 2 WILLIAM C. ROBINSON, ROBINSON ON PATENTS § 796 (1890)).

¹⁴⁵ See *id.* at 594.

¹⁴⁶ See *id.* at 594-95.

¹⁴⁷ See *Waterman v. Mackenzie*, 138 U.S. 252, 255 (1891); *Moore v. Marsh*, 74 U.S. (7 Wall.) 515, 520-21 (1868).

¹⁴⁸ *Willingham v. Lawton*, 555 F.2d 1340, 1344 (6th Cir. 1977).

¹⁴⁹ See *Ethicon*, 135 F.3d at 1468; *Schering Corp. v. Roussel-UCLAF SA*, 104 F.3d 341, 345 (Fed. Cir. 1997). A joint owner could either refuse to join suit or grant the infringing party a license (both of which happened in *Ethicon*), but cannot absolve a party of liability for past infringement and past damages. See *Schering*, 104 F.3d at 345. Such an action requires a release, which cannot be granted by a single joint owner alone. See *id.* A patent joint owner can be involuntarily joined only pursuant to a prior existing contract whereby the patent joint ownership has waived its right to refuse to join suit. See *id.* Also, if a patent owner grants an exclusive license, that owner stands in a relationship of trust to the licensee and must allow him to sue in his name. See *Ethicon*, 135 F.3d at 1468 n.9 (citing *Indep. Wireless Tele. Co. v. Radio Corp. of Am.*, 169 U.S. 459, 469 (1926), and *Willingham*, 555 F.2d at 1344-45).

¹⁵⁰ See *Ethicon*, 135 F.3d at 1468; *Barney & Carlson*, *supra* note 17, at 33; *Carlson & Barney*, *supra* note 12, at 260.

¹⁵¹ *Ethicon*, 135 F.3d at 1468 (quoting *Willingham*, 555 F.2d at 1344).

¹⁵² See *id.* The debate continues in popular legal media, see *supra* note 1 and accompanying text, and in scholarly journals, see *infra* notes 224-264 and accompanying text.

The patent concerned a trocar, a surgical tool.¹⁵³ The tool is used to make incisions in the wall of a body cavity that allow the insertion of medical instruments.¹⁵⁴ One problem with these devices was that the sudden loss of resistance when a surgeon completed an incision could cause the blade of the trocar to plunge forward into internal organs.¹⁵⁵ In the late 1970s, Dr. InBae Yoon began to conceive of an improved trocar that would lessen the risk of organ damage by retracting the blade into a protective sheath as it entered a body cavity and providing a signal to the surgeon when the incision was nearly complete.¹⁵⁶ In 1980, Dr. Yoon met an electronics technician, Young Chae Choi, who had worked on the research and development of other technical devices and agreed to help him on the trocar project.¹⁵⁷ After working together for eighteen months, the collaboration between the two ended when Choi decided the work was unlikely to produce any viable product and asked to leave.¹⁵⁸ Shortly thereafter, however, Yoon filed for a patent on the trocar, naming himself the sole inventor of all fifty-five claims.¹⁵⁹ When the patent issued, Yoon granted an exclusive license to Ethicon.¹⁶⁰ In 1989, Ethicon sued U.S. Surgical for infringement of the Yoon patent.¹⁶¹

In its defense, U.S. Surgical alleged that under § 256, Dr. Yoon's technical assistant Choi should be named a joint inventor on the Ethicon patent and stated that they had purchased a license from Mr. Choi.¹⁶² To corroborate his testimony, Choi provided his notebook sketches of some of the trocar features.¹⁶³ Notwithstanding a pointed dissent by Judge Newman, the majority held that Choi had contributed to two of the fifty-five claims in the patent.¹⁶⁴ The court found that, on both claims, Choi had at least contributed to one alternate structure of a means-plus-function statement.¹⁶⁵ For example, the court pointed to some of Choi's drawings of electrical networks and

¹⁵³ *Ethicon*, 135 F.3d at 1459.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ *Ethicon*, 135 F.3d at 1359.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Id.* Exclusive licensees have the power to sue for patent infringement, though the patent is not their property. See *supra* note 149.

¹⁶² *Ethicon*, 135 F.3d at 1459.

¹⁶³ *Id.* at 1462.

¹⁶⁴ *Id.* at 1461-64, 1469-71.

¹⁶⁵ See *id.* at 1462-64. For a discussion of means-plus-function claims see *supra* note 40.

indicated that these were alternate embodiments of the feature claimed as "[means for] creating a sensible signal."¹⁶⁶ The court pointed to other drawings in Choi's notebook resembling certain features of the patented trocar.¹⁶⁷ The court also cited a number of circumstantial factors in finding Choi's claim of joint inventorship corroborated.¹⁶⁸ For instance, the court highlighted (1) Yoon's need for a person with electronics expertise, (2) Choi's electronics expertise, (3) Yoon's proposal that the two work together, (4) their informal business relationship, (5) the length of time they worked together, (6) the absence of pay to Choi, (7) the similarity between the patent figures and the notebook drawings, and (8) Choi's letter saying he could no longer be a "member" of Yoon's business.¹⁶⁹ The court then held that the contributor of any disclosed means of a means-plus-function claim element is a joint inventor as to that claim, unless one asserting sole inventorship can show that the contribution of that means was simply a reduction to practice of the sole inventor's broader concept.¹⁷⁰ Therefore, and most importantly, the court held that by contributing to at least one claim in the patent, Choi became a joint inventor and joint owner of the entire patent.¹⁷¹ Because Choi was a joint owner of the patent, he became a necessary plaintiff in the suit against U.S. Surgical.¹⁷² As Choi would not join the suit, it was dismissed.¹⁷³

Judge Newman's dissent focused on the fundamental inequity of awarding Choi patent rights in all fifty-five claims of the patent when he had at most contributed to two claims.¹⁷⁴ Judge Newman pointed out that under pre-1984 law, Choi would not have been considered a joint inventor because he had not contributed to all the claims in the patent.¹⁷⁵ She interpreted § 116 as merely permitting the naming of an additional person as a joint inventor on a patent.¹⁷⁶ Equal ownership rights, she explained, did not automatically flow from this naming because inventorship and ownership of patent rights are concep-

¹⁶⁶ *Ethicon*, 135 F.3d at 1461-62.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.* at 1464.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.* at 1463-64.

¹⁷¹ *Ethicon*, 135 F.3d at 1466.

¹⁷² *Id.* at 1467-68.

¹⁷³ *Id.* at 1468.

¹⁷⁴ *See id.* at 1468-71.

¹⁷⁵ *Id.* at 1469.

¹⁷⁶ *See Ethicon*, 135 F.3d at 1469.

tually distinct.¹⁷⁷ Ownership rights in a patent, she contended, were based on the notion that both inventors had shared equally in the invention.¹⁷⁸ A joint invention, under pre-1984 law, was the simultaneous production of the genius and labor of both parties.¹⁷⁹ Thus, the tenancy-in-common model for patent ownership, each tenant owning an undivided share of the whole, was appropriate.¹⁸⁰ But because the law of joint inventorship had changed, the law of joint ownership should have been reevaluated by the majority.¹⁸¹ According to Judge Newman, by applying pre-1984 ownership concepts to the post-1984 amended law of joint inventorship, the majority had inequitably apportioned patent rights.¹⁸² Nevertheless, Judge Newman did not purport to provide a complete answer; she only proposed that perhaps a patent could be partitioned, such that each inventor owned the claims to which they contributed rather than the entire patent.¹⁸³ In fact, she noted with some frustration that there was little scholarly debate on the subject.¹⁸⁴

The *Ethicon* ruling exposed the previously dormant rift between joint inventorship and joint ownership and highlighted the seeming inequities that could result from it.¹⁸⁵ The case also created a somewhat treacherous state of law to guide group researchers in determining who should be involved in a research and development project, as even small contributors now were potentially joint inventors.¹⁸⁶ Judge Newman's dissent also generated some discussion on amending the law of joint ownership of patents.¹⁸⁷

C. *The Effect of Current Joint Inventorship Rules on Collaborative Research*

Since the 1984 amendments, the standards for joint inventorship have frequently been described as muddy—in that respect, little has

¹⁷⁷ See *id.* at 1469–70.

¹⁷⁸ See *id.* at 1469.

¹⁷⁹ *Id.*

¹⁸⁰ See *id.* at 1470.

¹⁸¹ See *Ethicon*, 135 F.3d at 1471.

¹⁸² See *id.* at 1471.

¹⁸³ Cf. *id.* at 1471 n.1.

¹⁸⁴ See *id.* at 1471.

¹⁸⁵ See *id.* at 1468–71.

¹⁸⁶ See *Ethicon*, 135 F.3d at 1468–71.

¹⁸⁷ This discussion occurred in both the legal media and scholarly journals. See *supra* note 1 and accompanying text; see generally Carlson & Barney, *supra* note 12; Konecny, *supra* note 16.

changed recently.¹⁸⁸ But the *Ethicon* case raised the stakes in the joint inventorship game and was met with a round of trepidation, a smattering of booing, and a dose of "how did we end up here?" hand-wringing.¹⁸⁹ Current joint inventorship rules affect conduct both in and out of the courtroom.¹⁹⁰

In the courtroom, a defendant in an infringement suit can often assert a defense based on joint inventorship principles.¹⁹¹ A defendant can find an unnamed joint inventor to license the patent to the defendant (or otherwise persuade the unnamed party to refrain from voluntarily joining the suit), as in *Ethicon*.¹⁹² A defendant can assert that a patent is invalid under § 256 for failure to name the proper inventors and place a burden on the patentee to show the named inventors are correct.¹⁹³ There are three steps in this process. First, the party asserting nonjoinder (the defendant) must show by clear and convincing evidence that the omitted inventor contributed to the patent.¹⁹⁴ Then, the burden of proving that the patent can be corrected falls on the plaintiff (a burden that entails proving that the unnamed inventor acted without deceptive intent).¹⁹⁵ Finally, the patentee must ask the court to correct the patent pursuant to the statute.¹⁹⁶ The effectiveness of this strategy is somewhat unclear, in part because the Federal Circuit seems to place the burden of proof on the plaintiff, but then presumes good faith on the part of the unnamed inventor.¹⁹⁷ It is at least a delay or nuisance tactic (particularly if a defendant can

¹⁸⁸ See *Mueller Brass Co. v. Reading Indus.*, 352 F. Supp. 1357, 1372 (E.D. Pa. 1972); Fasse, *supra* note 1, at 153.

¹⁸⁹ See *Carlson & Barney*, *supra* note 12, at 266; *Konecny*, *supra* note 16, at 142-44, 176; *Clark & Hayes*, *supra* note 1, at S8; *Lauson & Brunda*, *supra* note 1, at C12; *Sheldon & Mak*, *supra* note 1, at 7.

¹⁹⁰ See *infra* notes 191-221 and accompanying text.

¹⁹¹ See *Ethicon*, 135 F.3d at 1458-59; *Barney & Carlson*, *supra* note 17, at 24, 31-33 (discussing the strategies behind three affirmative defenses to patent infringement, the recent Federal Circuit cases that support them, and recommending legislative change to 35 U.S.C. § 256 in light of liberalized joint inventorship rules).

¹⁹² See *Ethicon*, 135 F.3d at 1459; *Barney & Carlson*, *supra* note 17, at 31-33.

¹⁹³ 35 U.S.C. § 256 (2000); see *Barney & Carlson*, *supra* note 17, at 29, 33; see also *supra* notes 119-121 and accompanying text.

¹⁹⁴ See *Pannu*, 155 F.3d at 1350; *Barney & Carlson*, *supra* note 17, at 24; see also *supra* notes 119-120 and accompanying text.

¹⁹⁵ See *Pannu*, 155 F.3d at 1350; *Barney & Carlson*, *supra* note 17, at 24; see also *supra* notes 119-120 and accompanying text.

¹⁹⁶ See *Pannu*, 155 F.3d at 1350-51; *Barney & Carlson*, *supra* note 17, at 24; see also *supra* note 121-122 and accompanying text.

¹⁹⁷ See *Barney & Carlson*, *supra* note 17, at 29; see also *supra* note 120 and accompanying text.

find more than one potential unnamed inventor, given the low hurdle for joint inventorship), but if there is uncontroverted evidence of deceptive intent, such a move could be fatal to the patent.¹⁹⁸ In another strategy, a defendant can assert that pursuant to § 112 ¶ 1 the patent did not disclose the best mode known to an inventive entity.¹⁹⁹ Though these technical defenses are generally disfavored by courts, they are nevertheless viable strategies which affect and sometimes determine the outcome of cases.²⁰⁰ Of course, aside from these defenses there is the more straightforward inequity that a relatively minor contributor (even one who only made a sales visit to the inventor),²⁰¹ on seeing the commercial success of a patented invention, may sue pursuant to § 256 to be named a joint inventor. That contributor could gain unrestricted ownership of the patent—a reward sufficient to entice many contributors, and their contingent-fee counsel, to initiate legal action.

Outside the courtroom, this law affects the conduct of both researchers and patent counsel in a few ways.²⁰² These extra-judicial effects are particularly disturbing, considering that the legislative intent of the 1984 patent amendments involved encouraging open research.²⁰³

First, the job of patent counsel is complicated by joint inventorship rules, which increase the interplay between patent counsel and researchers. Numerous commentators note the dangerous implications of unnamed joint inventors in an effort to increase awareness of potential problems.²⁰⁴ A frequent recommendation is to involve at-

¹⁹⁸ See Barney & Carlson, *supra* note 17, at 24; see also *supra* notes 119–122 and accompanying text.

¹⁹⁹ See 35 U.S.C. § 112 (2000); Barney & Carlson, *supra* note 17, at 32–33. Under 35 U.S.C. § 112 ¶ 1, a patent “shall set forth the best mode contemplated by the inventor of carrying out his invention.” If a defendant can prove the unnamed inventor knew of a best mode of carrying out the invention which was not included in the patent specification (even if that inventor is later added to the patent), then the patent might be invalidated under § 112. The Federal Circuit has indicated a willingness to entertain such an argument. See Barney & Carlson, *supra* note 17, at 32–33; see also Pannu, 155 F.3d at 1351 n.5 (stating that if a patent is corrected, a defendant may nevertheless assert the theory that the proper inventive entity failed to disclose its best mode).

²⁰⁰ See generally CHISUM, *supra* note 1, § 2.03[4], at 2–54.

²⁰¹ See generally Pannu, 155 F.3d at 1344.

²⁰² See Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Sheldon & Mak, *supra* note 1, at 7.

²⁰³ See SECTION-BY-SECTION ANALYSIS, 130 CONG. REC. 28,071, reprinted in 1984 U.S.C.C.A.N. at 5833–34; Sung, *supra* note 15, at 435–36.

²⁰⁴ See THE LAW AND STRATEGY OF BIOTECHNOLOGY PATENTS 138 (Kenneth D. Sibley ed., 1994) [hereinafter LAW AND STRATEGY] (observing that whenever collaborative team

torneys at an early stage in the research process and to evaluate the role of each collaborator on a team, as well as the potential rights accruing to that person.²⁰⁵ In this way, joint inventorship rules place significant restrictions on the ability of researchers to collaborate freely and necessitate attorney involvement in the research process.²⁰⁶

Second, the recognition that the subject matter in a patent can greatly affect ownership rights complicates the prosecution of patents.²⁰⁷ Often, patent counsel may be able to control how many inventions are contained in each patent, notwithstanding the rule in § 121 that each patent contain only a single invention.²⁰⁸ By including what is arguably more than one invention in a single patent, joint inventors may gain ownership rights to subject matter to which they did not contribute according to the *Ethicon* reasoning.²⁰⁹ For this reason, the right to control the patent prosecution resulting from collaborative research enterprises becomes crucial.²¹⁰

efforts produce an invention, the issue of inventorship is a "constant source of confusion" and must be carefully resolved); ARTHUR H. SEIDEL ET AL., *WHAT THE GENERAL PRACTITIONER SHOULD KNOW ABOUT PATENT LAW AND PRACTICE* 6 (5th ed. 1993) (recommending that patent counsel be involved when inventions are likely to result from large meetings, consultant work, and large-scale research programs); Regalado, *supra* note 15, at B4 (noting that in the setting of academic research, researchers conducting patentable work cannot interact without legal negotiations); *see also* Clark & Hayes, *supra* note 1, at S8; Lauson & Brunda, *supra* note 1, at C12; Sheldon & Mak, *supra* note 1, at 7.

²⁰⁵ *See* LAW AND STRATEGY, *supra* note 204, at 138; SEIDEL, *supra* note 204, at 6; Regalado, *supra* note 15, at B4.

²⁰⁶ *See* LAW AND STRATEGY, *supra* note 204, at 138; SEIDEL, *supra* note 204, at 6; Regalado, *supra* note 15, at B4.

²⁰⁷ Eric K. Steffe & Grant E. Reed, *Patent Prosecution and Joint Ownership of United States Patents*, INTELL. PROP. TODAY, May 2000, at 22 (describing numerous methods by which a patent prosecutor could control the number of inventions in a patent and thereby control ownership of those inventions, and recommending that parties to collaborative research agreements negotiate who has control to prosecute patentable work resulting from it).

²⁰⁸ *See id.* The authors explain that, based on current USPTO examination practices, more than one distinct invention may be examined in the same patent application. This result can be achieved via the following strategies: (1) a showing that the examination of the inventions in one patent does not create an undue burden on the examiner; (2) electing to prosecute a product claim, pursuant to a restriction requirement, then "re-joining" the process claim depending on that product claim; (3) requesting examination of multiple distinct "species inventions" which fall under a genus claim that may not be patentable; (4) examination of polynucleotide sequences, up to about ten of which can be examined per application; or (5) filing an application under the Patent Cooperation Treaty (a common international application) and proving that there is a "common technical relationship" between the claims and that when a patent is examined in the U.S. the claims will be examined together, even if a restriction would have been required in an original U.S. application. *See id.* at 22 nn.32 & 34.

²⁰⁹ *See Ethicon*, 135 F.3d at 1471; Steffe & Reed, *supra* note 207, at 22.

²¹⁰ *See* Steffe & Reed, *supra* note 207, at 22.

Third, the law affects relations between researchers.²¹¹ A recent exploration of this problem is Lawrence Sung's *Collegiality and Collaboration in the Age of Exclusivity*, which explores the impact of the new minimum criteria of joint inventorship on the medical and pharmaceutical arts.²¹² At its heart, Sung says, the patent system balances the public good of disclosing inventive ideas, so that others may build upon them, with the dangers of granting a limited monopoly right.²¹³ Science is optimally a collaborative effort.²¹⁴ This notion rests on the additive concept of background experience, cognitive synergy, and the social aspects of collaboration.²¹⁵ Sung posits that scientists are typically organized in communities of inventive scholars, and that the nature of collegial interaction and collaboration within these communities are influenced by patent laws.²¹⁶ This influence derives from the pecuniary and honorary benefits to being named as an inventor on a patent.²¹⁷

Sung argues that the pronouncements of the Federal Circuit in recent cases concerning joint inventorship have led to anxiety in the exchange of information between researchers.²¹⁸ One can point to amended § 116 and the court's interpretation of that provision as the primary factors.²¹⁹ Current doctrine could result in restrictions on extramural collaboration among scientists.²²⁰ As Sung puts it, *Ethicon* "escalat[es] the potential harm from unseen joint inventorship scenarios" and thereby fosters "an environment of caution and mistrust."²²¹

Other commentators such as Rochelle Dreyfuss have noted the increased value of collaboration in today's research environment.²²² She argues that the current prevalence and value of collaborative work product stems from a number of factors: intense specialization of many scientists, necessitating collaboration; the globalization of the marketplace; new avenues, particularly the Internet, that ease col-

²¹¹ Sung, *supra* note 15, at 435–36.

²¹² See *id.* at 411, 416.

²¹³ *Id.* at 413.

²¹⁴ *Id.* at 416–19.

²¹⁵ *Id.* at 419.

²¹⁶ Sung, *supra* note 15, at 420.

²¹⁷ See *id.* at 421.

²¹⁸ See *id.* at 435.

²¹⁹ See *id.* at 436.

²²⁰ See *id.* at 435–36, 438.

²²¹ Sung, *supra* note 15, at 436.

²²² See Dreyfuss, *supra* note 14, at 1161–67.

laboration; the rise in use of transient expert collaborators such as consultants; the expansion of intellectual property rights; and the need to encourage highly accomplished experts to collaborate.²²³

D. *Heretofore Proposed Solutions*

Most proposals for change have focused on procedural solutions or on the law of joint ownership under § 262, which Congress left unchanged in 1984.²²⁴ The suggestions take various forms, but their general thrust is to amend the joint ownership rules either judicially or legislatively through an amendment to § 262.²²⁵ Such an amendment would essentially update the law of joint ownership to comport with the post-1984 law of joint inventorship.²²⁶ A brief discussion of these approaches illustrates the feasibility of amending joint ownership law and the variety of means to do so, and simultaneously provides background for understanding where such approaches succeed and where they fail.

In *The Division of Right Among Joint Inventors: Public Policy Concerns After Ethicon v. U.S. Surgical*, Dale Carlson and James Barney offer a practitioner's perspective and suggest modification to the rule that patent joint owners must voluntarily join a suit for infringement, the crux of the problem in *Ethicon*.²²⁷ They examine the standard three policy reasons for this rule.²²⁸ First, the authors confront the rationale that each interested party should have an opportunity to protect that party's substantive rights;²²⁹ when any one joint owner attempts to sue on a patent, the patent rights of all are put at risk because the patent could be found invalid during the proceedings.²³⁰ Nevertheless, the authors point out that if patent owners are at each other's mercy with

²²³ See *id.* at 1162–63, 1166.

²²⁴ See 35 U.S.C. § 262 (2000); Carlson & Barney, *supra* note 12, at 263–66; Tigran Guledjian, Notes & Comments, *Teaching the Federal Circuit New Tricks: Updating the Law of Joint Inventorship in Patents*, 32 LOY. L.A. L. REV. 1273, 1301–02 (1999); Konecny, *supra* note 16, at 175–76.

²²⁵ See 35 U.S.C. § 262; Carlson & Barney, *supra* note 12, at 263–66; Guledjian, *supra* note 224, at 1301–02; Konecny, *supra* note 16, at 146, 176.

²²⁶ See 35 U.S.C. § 262; Carlson & Barney, *supra* note 12, at 263–66; Guledjian, *supra* note 224, at 1301–02; Konecny, *supra* note 16, at 146, 176.

²²⁷ See Carlson & Barney, *supra* note 12, at 263–64.

²²⁸ *Willingham*, 555 F.2d at 1344–45; see Carlson & Barney, *supra* note 12, at 260–61.

²²⁹ *Willingham*, 555 F.2d at 1344–45; see Carlson & Barney, *supra* note 12, at 260.

²³⁰ *Willingham*, 555 F.2d at 1344–45; see Carlson & Barney, *supra* note 12, at 260.

respect to licensing, there seems to be no justification why they should not be at each other's mercy in bringing infringement actions.²³¹

Carlson and Barney also confront the rationale that there is a public interest in not requiring defendants to litigate multiple suits concerning infringement of a single patent.²³² They argue that this goal would also be achieved by allowing involuntary joinder.²³³ In addition, the authors challenge the notion that there is a public interest in enabling a patent joint owner to license to third parties without harassing suits by other joint owners.²³⁴ Carlson and Barney argue that this rule is really based on a desire for judicial efficiency; sanctions for harassing lawsuits already exist under the Federal Rules of Civil Procedure ("FRCP") and any such lawsuit could easily be dismissed before trial simply by producing a copy of the license from the other joint owner.²³⁵ As a result, they propose that non-consenting parties be involuntarily joined under Rule 19(a) of the FRCP.²³⁶

In another approach, Philip Konecny's *Windfall Property Rights for the Left-Out Co-Inventor Who Gets Let into the Patent* explores solutions to the problem by discussing various ways to divide joint inventors' ownership interests.²³⁷ Konecny bases his solutions on the proposition that undivided joint ownership depends on substantially equal joint inventorship.²³⁸ Konecny presents several options for dealing with the discord between joint inventorship and joint ownership, based on the idea that patent ownership can be apportioned rather than left as undivided shares in a joint tenancy, an idea espoused by other commentators as well.²³⁹

Konecny's first suggestion is to invalidate the patent if there is a dispute over inventorship, then allow each inventor to apply for another patent containing only the inventor's specific subject matter.²⁴⁰

²³¹ See Carlson & Barney, *supra* note 12, at 260–61.

²³² *Willingham*, 555 F.2d at 1344; see Carlson & Barney, *supra* note 12, at 261.

²³³ See Carlson & Barney, *supra* note 12, at 261.

²³⁴ *Willingham*, 555 F.2d at 1344–45; see Carlson & Barney, *supra* note 12, at 261.

²³⁵ See Carlson & Barney, *supra* note 12, at 261.

²³⁶ See *id.* at 263–64. The authors also advocate clarifying the law with respect to joint inventorship and property rights after the 1984 amendments, but do not go into detail about what form the clarifications should take. See *id.* at 266.

²³⁷ Konecny, *supra* note 16, at 141.

²³⁸ *Id.* at 160.

²³⁹ *Id.* at 164; see also Dreyfuss, *supra* note 14, at 1224–25 (proposing a "proportionality principle" in which each contributor's rights are limited to the claims to which they contributed and each contributor is given an implied right to use the other inventions protected by the patent).

²⁴⁰ Konecny, *supra* note 16, at 164–65.

He notes that this rule would be very harsh, as each party would lose patent rights and subject matter in the patent would be split.²⁴¹ His second solution is to sever the claims of the patent, retaining the undisputed claims for the named inventor.²⁴² The remaining claims would be subject to a reissue proceeding.²⁴³ This solution may not work, admits Konecny, if the claims of the patent cannot be severed without destroying the value of the patent—for each severed group of claims would have to be patentable on its own.²⁴⁴

Another solution he proposes is to limit the undivided rights of the newly named joint inventor to the claims to which that joint inventor contributed.²⁴⁵ Because § 256 only states that courts “may” add a joint inventor to a patent, Konecny argues courts have the power to grant rights to each claim rather than to the patent as a whole.²⁴⁶ Then the joint inventors could bargain for the claims, which would result in a more accurate valuation of each inventor’s contribution.²⁴⁷

Konecny also explores the idea of granting only one inventor (either the named or omitted inventor) ownership rights and giving the other owner damages under 35 U.S.C. § 284.²⁴⁸ It is unclear how damages can be estimated (especially future damages) according to this section, which pertains to infringement, but the suggestion seems to evoke an accounting process.²⁴⁹ Konecny does say that, if courts grant patent rights to the party most invested in the invention, an efficient economic result is achieved.²⁵⁰ According to Konecny, under this scheme the court would give the party who can best bring the patented technology to market an unfettered right to the patent.²⁵¹ That party would only be burdened by a pecuniary liability, which can be taken out of the profits from the patent.²⁵²

Finally, Konecny suggests that the standard for joint inventorship simply be raised for patents in which an omitted joint inventor would otherwise gain rights to substantially more claims than that to which

²⁴¹ See *id.*

²⁴² *Id.* at 165.

²⁴³ *Id.*

²⁴⁴ See *id.*

²⁴⁵ Konecny, *supra* note 16, at 168.

²⁴⁶ See 35 U.S.C. § 256 (2000); Konecny, *supra* note 16, at 168.

²⁴⁷ See Konecny, *supra* note 16, at 168.

²⁴⁸ See *id.* at 168–70.

²⁴⁹ 35 U.S.C. § 284; Konecny, *supra* note 16, at 168–70.

²⁵⁰ *Id.*

²⁵¹ *Id.*

²⁵² Konecny, *supra* note 16, at 170.

he contributed.²⁵³ This approach would mean that the party who made a minor contribution would lose ownership rights.²⁵⁴ Despite its harsh consequences, this solution has the advantage of being a quick judicial fix, without the administrative and foundational shift in patent prosecution found in his other suggestions.²⁵⁵

Konecny's main argument is that ownership of patents can be fashioned in an equitable and efficient way without upsetting the current framework for the law of joint inventorship.²⁵⁶ His approach is echoed in Tigran Guledjian's *Teaching the Federal Circuit New Tricks: Updating the Law of Joint Inventorship in Patents*.²⁵⁷ First, Guledjian advocates fractioning the patent into individual claims and calculating an ownership percentage based on the number of claims to which a joint inventor contributed.²⁵⁸ Thus, by establishing contribution to three claims in a patent with ten claims, an alleged joint inventor would be entitled to a thirty-percent ownership share.²⁵⁹ Guledjian bases this approach on the common-law right of co-tenants to force partition of their property.²⁶⁰ He does not explain how rights attaching to the patent would be split, or what significance a split would entail for ownership rights, especially when each joint owner can unilaterally license a patent.²⁶¹

Guledjian's second solution is to raise the bar for joint inventorship, again much as Konecny advocates.²⁶² He gives the suggestion a twist, however, by proposing a higher bar for inventorship to determine only ownership rights, not inventorship.²⁶³ Thus, an omitted joint inventor might recover the prestigious accolades that accompany inventor status, but not the pecuniary reward of ownership.²⁶⁴

²⁵³ *See id.*

²⁵⁴ *Id.*

²⁵⁵ *See id.* at 171.

²⁵⁶ *See id.* at 175-77.

²⁵⁷ Guledjian, *supra* note 224, at 1298.

²⁵⁸ *Id.* at 1299.

²⁵⁹ *See id.*

²⁶⁰ *See id.*

²⁶¹ *See id.*

²⁶² Guledjian, *supra* note 224, at 1301.

²⁶³ *See id.*

²⁶⁴ *See id.*

II. ANALYSIS

A. *Amending Joint Inventorship Rules Is a Better Solution Than Amending Joint Ownership Rules*

Conceptually, the problem of *Ethicon, Inc. v. U.S. Surgical Corp.* is often characterized as a discord between post-1984 rules for joint inventorship and pre-1984 rules for joint ownership.²⁶⁵ This discord, originating from the 1984 amendments to 35 U.S.C. § 116, has had effects that are in some instances directly contrary to the explicit Congressional intent of those amendments.²⁶⁶ There are two general solutions to this problem: the law of joint ownership could be updated to reflect relaxed inventorship rules, or the law of joint inventorship could be made more stringent to comport again with all-or-nothing joint ownership rules.²⁶⁷

Recent scholarship focuses on the former solution: updating the outdated framework for joint ownership.²⁶⁸ This approach is attractive because it seems simple and straightforward and because the consequences of joint ownership are so harsh.²⁶⁹ But tinkering with joint ownership harbors many problems and does not actually address the underlying difficulties with current joint inventorship rules.

There are important policy reasons for maintaining current joint ownership rules.²⁷⁰ The rule that each joint owner has rights to the entire patent is logically equitable—if a patent contains one invention and each joint inventor has contributed to that unitary invention, the “amount” of contribution is not crucial, for a working invention would not exist without either contribution.²⁷¹ This logic becomes

²⁶⁵ See *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1469–71 (Fed. Cir. 1998); Carlson & Barney, *supra* note 12, at 266; Guledjian, *supra* note 224, at 1301–02; Konecny, *supra* note 16, at 176.

²⁶⁶ See *supra* notes 38–110, 188–221 and accompanying text.

²⁶⁷ Cf. *supra* notes 175–184, 238–256 and accompanying text.

²⁶⁸ See Carlson & Barney, *supra* note 12, at 266; Guledjian, *supra* note 224, at 1301–02; Konecny, *supra* note 16, at 176. But see Rivka Monheit, Note, *The Importance of Correct Inventorship*, 7 J. INTELL. PROP. L. 191, 222–24 (1999) (suggesting that the *Ethicon* problem could be avoided if Congress or the USPTO would clarify the guidelines for joint inventorship).

²⁶⁹ See Carlson & Barney, *supra* note 12, at 266; Guledjian, *supra* note 224, at 1301–02; Konecny, *supra* note 16, at 176; see also *supra* notes 139–151 and accompanying text.

²⁷⁰ See *supra* notes 229–234 and accompanying text.

²⁷¹ See 35 U.S.C. § 121 (2000). Often, the “amount” of contribution might be thought equivalent to the “effort” made by an inventor. See, e.g., Carlson & Barney, *supra* note 12, at 263. But it is unclear why the amount of time or work, or any other measure of individual contribution, should be the indicator of inventive contribution. Some great ideas are the product of laborious effort, some are epiphanies. Patent laws protect new, useful,

difficult to accept if instead the contribution of one inventor only serves to add a particular and minor feature to an invention.²⁷² Then the patent begins to look like it embodies one invention and one minor improvement to that invention, which nevertheless may be patentable itself.²⁷³ In this case, however, there are either two patentable inventions or one patentable invention and an unnecessary feature.²⁷⁴ In either circumstance, each invention can (and should) be placed in its own separate patent if an inventor wishes to avoid the entire problem of joint ownership.²⁷⁵ But even beyond this formalism, a practical imperative supports the current doctrine: if courts currently have trouble deciding who qualifies as a joint inventor, they will face even greater difficulty trying to parse technical data, evaluate inevitably conflicting expert testimony regarding which technical contribution was more important, and determine an equitable measure of contribution from each inventor. The current catch-all standard for joint inventorship is conceptually pleasing, but difficult to apply.²⁷⁶ A judge must first attempt to evaluate the existence of an inventive "conception" from a lab notebook sketch or testimony, then evaluate whether that abstract contribution is "significant" in the context of the invention.²⁷⁷ And in a struggle over joint inventorship, a court must further make decisions about the knowledge of the named inventor—for instance, assuming someone suggested an idea to the named inventor,

nonobvious ideas that are turned into inventions; they do not protect effort. See 35 U.S.C. §§ 101 (requiring a patentable invention to be new and useful), 102 (requiring a patentable invention to be novel), 103 (requiring a patentable invention to be non-obvious, and stating "[p]atentability shall not be negated by the manner in which the invention was made").

²⁷² Cf. 35 U.S.C. § 121; MANUAL, *supra* note 38, §§ 802–803.

²⁷³ Cf. 35 U.S.C. § 121; MANUAL, *supra* note 38, §§ 802–803.

²⁷⁴ Cf. 35 U.S.C. § 121; MANUAL, *supra* note 38, §§ 802–803.

²⁷⁵ See 35 U.S.C. § 121; MANUAL, *supra* note 38, §§ 802–803. There is additional motivation, beyond mere doctrinal logic, for inventors to claim one invention per patent. It is good and common practice to ensure that each patent claim only the invention. A patent with "extra" features unnecessary to the invention is not infringed unless every claimed limitation and feature of the invention—even an unnecessary one—is copied. Thus infringers might be able to copy the invention claimed in a poorly drafted patent and avoid liability by simply omitting unnecessary but claimed features. See CHISUM, *supra* note 1, § 18.03[4], at 18–161 to 18–163; ROBERT C. FABER, LANDIS ON MECHANICS OF CLAIM DRAFTING § X-1 to X-3 (4th ed., release 5, 2001) [hereinafter FABER, LANDIS ON MECHANICS]; ROBERT C. FABER, *Patent Claim Writing*, in FUNDAMENTALS OF PATENT PROSECUTION: A BOOT CAMP FOR CLAIM DRAFTING & AMENDMENT WRITING 3 (Martin Pfeffer, Chair, 2000) [hereinafter Faber, *Patent Claim Writing*].

²⁷⁶ See *supra* notes 53–57 and accompanying text.

²⁷⁷ See *supra* notes 53–57 and accompanying text.

had that inventor already conceived of the idea anyway?²⁷⁸ What was the nature of their interaction?²⁷⁹ These are difficult questions to resolve accurately inside (or outside) a courtroom.²⁸⁰ In addition, patent claims are not necessarily written to reflect inventive contribution.²⁸¹ There is no limit to the number of claims on an invention, and claims may overlap or duplicate certain features in an effort to bolster patentability arguments before the USPTO.²⁸² Patent counsel may thus claim the same invention in many ways.²⁸³ At the same time, patent counsel might claim two inventions in one patent for efficiency and to capture subject matter for one owner.²⁸⁴ In sum, requiring or relying on the patent prosecution process accurately and narrowly to identify "the invention" in the patent is a dubious proposition because patents are drafted to secure the widest possible protection for the inventor's disclosure. Thus, very little guides courts to make easy, efficient decisions about inventive contribution.²⁸⁵ This makes solutions that fraction ownership daunting to implement.²⁸⁶

Even if a court could determine an ownership interest share for an accounting, every joint owner would have the right to make and use the patented subject matter and could license the patent without accounting to other owners.²⁸⁷ Therefore, fractioning ownership of the patent would make little difference unless the rules regarding patentees' rights were modified.²⁸⁸ But disallowing unilateral action by joint owners is not necessarily an efficacious solution, for it would give one joint owner the power to inhibit utilization of the patent.²⁸⁹ A sin-

²⁷⁸ See *supra* notes 53–57 and accompanying text.

²⁷⁹ See *supra* notes 53–57 and accompanying text.

²⁸⁰ See *supra* notes 53–57 and accompanying text.

²⁸¹ See FABER, LANDIS ON MECHANICS, *supra* note 275, at X-1 to X-3; Faber, *Patent Claim Writing*, *supra* note 275, at 14–15; cf. 35 U.S.C. § 121 (2000); MANUAL, *supra* note 38, § 706.03(k).

²⁸² See MANUAL, *supra* note 38, § 706.03(k).

²⁸³ See *id.*

²⁸⁴ See *supra* notes 207–208 and accompanying text.

²⁸⁵ See also Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293, 1306–07, 1316–17 (1996) (arguing that private arrangements to assess and determine rights entail lower costs than solutions involving judicial machinery).

²⁸⁶ See *supra* notes 237–256 and accompanying text.

²⁸⁷ See *supra* notes 139–151 and accompanying text.

²⁸⁸ See *supra* notes 139–151 and accompanying text.

²⁸⁹ See *supra* notes 144–145 and accompanying text. It might be more clear to say that each party could inhibit utilization of an invention. If there are some number of constituent parts in a working invention, each owned by a separate inventor, then a single intransigent owner could prevent utilization of the invention. This is so whether the ownership of

gle party might refuse—absent yet more judicial intervention—to allow others to work the patent, or to license the patent to another party seeking to commercialize the patent.²⁹⁰ The transaction costs in such a situation are extremely high, as the joint owners (some of whom may have been antagonistic former litigants in a § 256 action to become joint owners) are forced to bargain with one another.²⁹¹ This result seems worse than that in *Ethicon*—a single joint inventor still wields considerable power, but now can act to block any commercial development of the patent, a public disservice.

In addition to the policy rationales for maintaining current joint ownership rules, Congressional intent ought to set priority in the inevitable tradeoff between equity and pragmatism that accompanies the determination of patent rights.²⁹² The clear intent of the 1984 amendments to § 116 focused on promoting large-scale, team-oriented collaborative research.²⁹³ Thus, collaboration and collegiality among researchers ought to be the primary consideration in addressing the problem *Ethicon* presents.²⁹⁴

To this end, heretofore proposed amendments to the law of joint ownership seem only tangentially related to the essential problem: joint inventorship law stifles collaboration among large research teams and unnecessarily involves lawyers in the inventive process.²⁹⁵ They muddy the legal landscape, preventing inventors from knowing when rights accrue and when bargaining is required.²⁹⁶ In short, in the context of *Ethicon*, they keep Dr. Yoon unaware that he should negotiate with his assistant for patent rights.²⁹⁷ So, if a research team is unsure, because of the legal consequences, whether to involve an outside collaborator, they will hardly be comforted by the suggestion that the outside collaborator might own only some unknown fraction, possibly the crucial fraction, of the resulting invention.²⁹⁸ They will be only minimally assuaged by the suggestion that, via involuntary joinder, they can force that outside collaborator to join their lawsuits

a single patent has been fractioned among multiple owners or ownership has been fractioned into multiple patents.

²⁹⁰ See *supra* notes 144–145 and accompanying text.

²⁹¹ See *supra* notes 144–145, 248–251 and accompanying text.

²⁹² See *supra* notes 281–286 and accompanying text.

²⁹³ Cf. *supra* notes 38–110 and accompanying text.

²⁹⁴ See *supra* notes 211–221 and accompanying text.

²⁹⁵ See *supra* notes 168–221 and accompanying text.

²⁹⁶ See *supra* notes 168–221 and accompanying text.

²⁹⁷ See *supra* notes 168–221 and accompanying text.

²⁹⁸ See *supra* notes 211–221 and accompanying text.

against infringers (assuming the collaborator has not granted the infringers a license).²⁹⁹ With these approaches remains the basic issue: fear of having a joint inventor named on the patent.³⁰⁰ That fear originates from uncertainty about the law of joint inventorship, not the law of joint ownership.³⁰¹

Furthermore, amending the law of joint ownership seems to maintain troublesome legal involvement in research and development.³⁰² It does not address or eliminate the initial reason for the legal presence (to identify possible joint inventors), but instead may increase the lawyer's role.³⁰³ Patent counsel, it seems, need continued contact with research teams to determine not only who contributed to an invention but what pieces they contributed.³⁰⁴ This is a point that did not seem to bother the *Ethicon* court, as the majority dismissed Judge Newman's dissent by commenting that "where inventors choose to cooperate in the inventive process, their joint inventions may become joint property without some express agreement to the contrary."³⁰⁵ This approach also increases legal intrusion in another way—if each part of an invention is up for grabs in a piecemeal joint ownership approach, control of patent prosecution becomes vital.³⁰⁶ This, in effect, creates another battleground for competing inventorship interests.³⁰⁷ In sum, amending joint ownership law may address the in-court effects of the *Ethicon* problem, but amending the law of

²⁹⁹ See *supra* notes 211–221 and accompanying text.

³⁰⁰ See Sung, *supra* note 15, at 435; see also *supra* notes 211–221 and accompanying text.

³⁰¹ See *supra* notes 211–221 and accompanying text.

³⁰² See *supra* notes 202–210 and accompanying text. Some have argued that legal involvement in this area is needed because collaborators cannot always bargain efficiently themselves. See Dreyfuss, *supra* note 14, at 1165, 1172.

³⁰³ See *supra* notes 202–210 and accompanying text.

³⁰⁴ See LAW AND STRATEGY, *supra* note 204, at 138; SEIDEL, *supra* note 204, at 6; Regalado, *supra* note 15, at B4; see also *supra* notes 202–210 and accompanying text. A cynic might predict that allowing each part of an invention to be owned separately will lead to a separate legal fight over each part of the invention.

³⁰⁵ *Ethicon*, 135 F.3d at 1466. Besides inviting the law into the lab, there are at least two other issues worth noting about this argument: first, Dr. Yoon apparently did not believe he was entering into a cooperative and inventive process with Choi, or even that the process would bear patentable fruit; second, as inventors become aware of this standard, it is likely to inhibit choices such inventors make, the likely victim being collaboration. See Dreyfuss, *supra* note 14, at 1166 (arguing that collaboration holds particular social value in today's research, so that private, self-inflicted choices concerning inventorship arrangements nevertheless inflict significant social costs which the law must deal with); Dale L. Carlson & James R. Barney, *Who Owns What's in Your Patent?*, INTELL. PROP. TODAY, June 1998, at 8 n.15.

³⁰⁶ See *supra* notes 207–214 and accompanying text.

³⁰⁷ See *supra* notes 207–214 and accompanying text.

joint inventorship better addresses both the in-court and out-of-court effects.³⁰⁸

B. Efficacious Joint Inventorship Rules

The goals of joint inventorship rules include equity,³⁰⁹ ease of administration,³¹⁰ and promotion of collegial and collaborative team research.³¹¹ This last goal may be further broken-down: collaboration requires equitable rules, as potential collaborators must feel that their inventive efforts will be rewarded.³¹² But it also requires something more—that each potential inventor know the threshold for achieving joint inventorship status set by joint inventorship law.³¹³ Clear, predictable rules about the legal requirements for inventorship status allow parties to negotiate within known bounds and find agreeable terms on which to collaborate.³¹⁴ Though parties may not know whether their work will result in a patentable product, clear joint inventorship rules at least allow them to assess the likelihood of a particular person becoming a joint inventor.³¹⁵ In the absence of clear rules, there is uncertainty about the potential rights accruing to a particular collaborator—this inhibits any agreement on terms of collaboration.³¹⁶ Thus, an additional and most important goal for joint inventorship rules is to provide clear rules that are predictable in application (this goal is hereafter termed “clarity”).³¹⁷

Prior to the 1984 amendments, some courts embraced the idea of an “all-claims” rule for joint inventorship.³¹⁸ This rule represents one extreme in a range of possible rules, as measured by equity, ease

³⁰⁸ See *supra* notes 192–221 and accompanying text.

³⁰⁹ See *supra* notes 174–183 and accompanying text; cf. *Ethicon*, 135 F.3d at 1469–71.

³¹⁰ See *supra* notes 281–284 and accompanying text.

³¹¹ See *supra* notes 292–294 and accompanying text.

³¹² See *supra* notes 71–77, 211–223 and accompanying text.

³¹³ See *supra* notes 211–223 and accompanying text.

³¹⁴ See Dreyfuss, *supra* note 14, at 1169 (discussing Suzanne Scotchmer, *Protecting Early Innovators: Should Second Generation Products Be Patentable?*, 27 RAND J. ECON. 322 (1994) (advocating ex ante collaboration agreements as the most efficient way to promote creative work)); cf. *supra* notes 211–223 and accompanying text.

³¹⁵ See Dreyfuss, *supra* note 14, at 1169.

³¹⁶ See *id.*; cf. *supra* notes 211–223 and accompanying text.

³¹⁷ See Dreyfuss, *supra* note 14, at 1169; cf. *supra* notes 190–223 and accompanying text. See generally Robert W. Harris, *Conceptual Specificity as a Factor in Determination of Inventorship*, 67 J. PAT. & TRADEMARK OFF. SOC'Y 315, 315 (1985) (proposing “degree of specificity” as a factor in determining inventorship). Using the “degree of specificity” as a yardstick for inventive contribution clarifies joint inventorship determinations by requiring an inventive contribution be a specific portion of the invention. See Harris, *supra*, at 315.

³¹⁸ See *supra* notes 100–110 and accompanying text.

of administration, promotion of collaboration, and clarity.³¹⁹ The rule is very easy to administer but inflexible and so prone to misrepresent the importance of the contribution from each purported joint inventor.³²⁰ It seems to inhibit collaboration, as a person might be hesitant to join a product in which that person contributes significantly but could earn no patent rights.³²¹ The current state of the law, essentially that contribution to "any claim" (or really any part of any claim), is at the opposite end of that continuum.³²² The rule is easy to administer, but is inaccurate and inequitable in assessing inventive contribution.³²³ Its low threshold creates fear about an *Ethicon*-type scenario.³²⁴ Neither of these rules are particularly clear in their application until the patent is written and the claims defined; at the research stage, any team member could or could not be a joint inventor.³²⁵

Efficacious rules for joint inventorship may achieve equity by avoiding extremes of claim counting, refraining from one catch-all standard for all fact patterns, and instead relying on case by case analysis.³²⁶ Such rules may achieve clarity if tailored to the context in which the invention was made.³²⁷ Such rules will be easy to administer if they use a bright-line standard, or at least a specific set of factors, for each situation.³²⁸ Joint inventorship rules classed by inventive entity, inventive context, and technical field satisfy these criteria.³²⁹ These rules might be thought of as entries in a table or matrix, with a sepa-

³¹⁹ Cf. *supra* notes 100–110 and accompanying text.

³²⁰ Cf. *supra* notes 100–110 and accompanying text.

³²¹ Cf. *supra* notes 100–110 and accompanying text. Indeed, under this rule, control of claim drafting is paramount: a key feature of the invention could simply be written out of just one claim so as to usurp the feature for the named inventor of the remaining claims. Cf. *supra* notes 100–110 and accompanying text.

³²² Cf. *supra* notes 38–40 and accompanying text.

³²³ See *Ethicon*, 135 F.3d at 1469–71; Sung, *supra* note 15, at 435–36; see also *supra* notes 174–187 and accompanying text.

³²⁴ See *Ethicon*, 135 F.3d at 1469–71; Sung, *supra* note 15, at 435–36; see also *supra* notes 174–187 and accompanying text.

³²⁵ See *supra* notes 174–187 and accompanying text; cf. *supra* notes 100–110 and accompanying text.

³²⁶ See *Ethicon*, 135 F.3d at 1469–71; see also *supra* notes 174–183, 254–256 and accompanying text.

³²⁷ See *supra* notes 281–284 and accompanying text.

³²⁸ Cf. *supra* notes 281–286 and accompanying text.

³²⁹ For example, courts have applied the rule of simultaneous conception and reduction to practice to experimental sciences because those sciences often develop and refine ideas, perhaps significantly, in testing a hypothesis. See *supra* note 42. Predictive sciences, however, use the rule by which conception and reduction to practice are separate steps. See *supra* note 42. The Federal Circuit might consider inventorship questions in a more customized fashion, as well.

rate set of legally important factors for every common class or situation existing in typical research environments.

For instance, distinct inventive entities include corporate research teams, research partners, researchers and assistants, faculty and postdoctoral students, and hired collaborators or consultants. Inventive context is closely related to inventive entity: was the invention a product of large corporate research and development teams or two inventors in a garage, a product of a single meeting or an extended agreement to collaborate? The following factors may be developed based on these distinctions. If large research teams are involved, a court should require less evidence of contribution from each team member.³³⁰ This is not to say that each team member must not "contribute to conception." If a team holds large meetings, performs research, and banters about ideas in a laboratory setting, then courts should require evidence of each member's contribution before concluding that each team member, in the context of that collaboration, did contribute to the final product.³³¹ At the same time, in this research-team context, Congressional intent ought to control. Courts should raise a presumption that every inventor in that research team contributed.³³² On the other hand, if there are only two partners involved in a research endeavor, then the likelihood of each partner contributing seems greater but depends closely on the relationship of the parties, including who initiated collaboration, or if the relationship is one of supervisor and subordinate.³³³ The latter situation, given the rule that following directions does not constitute contribution, ought to give rise to a presumption of non-inventorship.³³⁴ Two pertinent factors thus are the size of the inventive entity and the relationship of inventive entities. Another factor implicit in this analysis is the length of time during which collaboration took place, a short meeting less likely to produce (though not incapable of producing) joint contributive effort than a long period of cooperation.³³⁵ The na-

³³⁰ See *supra* notes 70, 90-98 and accompanying text.

³³¹ See *supra* notes 70, 90-98 and accompanying text.

³³² See *supra* notes 71-76 and accompanying text.

³³³ Compare *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911, 916-17 (Fed. Cir. 1992), and *Gen. Motors Corp. v. Toyota Motor Co.*, 467 F. Supp. 1142, 1150-51 (S.D. Ohio 1979) (team research), with *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998) (individual researchers), and *Ethicon*, 135 F.3d at 1456, and *Monsanto Co. v. Kamp*, 269 F. Supp. 818, 824 (D.D.C. 1967).

³³⁴ Cf. *supra* note 52 and accompanying text.

³³⁵ Cf. *Kimberly-Clark*, 973 F.2d at 916-17 (requiring collaboration between joint inventors).

ture of the relationship between researchers should constitute another factor: a sales visit is less likely to produce deep inventive collaboration than a protracted partnership between two individuals.³³⁶ Also, the existence of a formal contract may specify certain employee duties that may or may not be relevant to the research. If the job description is to effect instructions given by a supervising researcher, then an inventive contribution is less likely than a simple following of orders.³³⁷

Finally, the field of research is pertinent.³³⁸ Those who conduct experiments and tests in the pharmaceutical industry, for instance, are more likely to contribute to conception (especially under a theory of simultaneous conception and reduction to practice) than those who perform the same function in the predictive sciences, which make extensive use of modeling and computer analysis.³³⁹ Contribution to conception in an esoteric field entailing years of education is simply less likely for those without that background, whereas an invention concerning a non-technical idea is much more accessible.³⁴⁰ Thus, the factor of technical complexity ought to be considered in assessing inventorship.³⁴¹

Using these factors, and others courts may develop, it is apparent that the amount and nature of collaboration can influence a court's joint inventorship analysis.³⁴² This result is desirable because it allows a research team to know clearly that if it maintains limited contact with an outside consultant (for instance) it will be that much harder (though not impossible) for the consultant to bring a successful § 256 action on any resulting patent.³⁴³ If the amount of contact increases beyond a particular level, as defined by developed precedent in this matrix organization, the research team should know that it should negotiate with the consultant as a potential joint inventor, possibly for

³³⁶ Cf. *supra* notes 65-70 and accompanying text.

³³⁷ See *supra* note 51 and accompanying text.

³³⁸ See *supra* note 45.

³³⁹ See *supra* note 45.

³⁴⁰ Cf. *supra* note 45 and accompanying text. If conception is defined as the inventor's mental grasp of a complete and operative invention, including its theory of operation, then those with more education, experience, or training in a particular field would seem to have an inherent advantage in understanding and formulating, and therefore legally conceiving of, an invention in their particular field of expertise. See *Ethicon*, 135 F.3d at 1460.

³⁴¹ See *supra* note 343.

³⁴² No doubt courts consider, implicitly or intuitively, some of these factors already, but not consistently or explicitly as is needed for clear rules.

³⁴³ Cf. *supra* notes 211-221 and accompanying text.

an assignment of rights.³⁴⁴ If these factors were entries in a matrix of possible research fact patterns, and if the judiciary were sufficiently consistent and clear about their relative importance, one could choose a particular type of situation and understand which factors control, in a semi-custom fashion.

These factors, admittedly, cannot be developed completely in the abstract. But the Federal Circuit could begin to create multiple rules as cases come before it, filling in an abstract matrix, instead of relying on the usual "contribution to conception" muddiness which supposedly guides all decisions in all fact patterns.³⁴⁵ The Federal Circuit could create as many or as few factors or rules as needed. This approach does not necessarily entail an amendment to § 116.³⁴⁶ That section imposes only negative criteria—circumstances that do not disqualify one from inventorship.³⁴⁷ It does not prohibit the imposition of particular positive criteria unless they impinge on the negative criteria in the text of the statute.³⁴⁸ For instance, as long as the Federal Circuit does not require joint inventors each to contribute the same amount to an invention, or to contribute to every claim in the patent, additional requirements are not in conflict with the statute.³⁴⁹

Such an approach should not mean the standard for joint inventorship would vary (at least any more than it currently does), or that it would espouse a particular bias against certain roles in the inventive process.³⁵⁰ It would allow a court to customize the factors it uses for each type of situation, however, and thereby create more consistent, more understandable, and more predictable results.³⁵¹ Ultimately, the goals of an efficacious joint inventorship standard are in tension: total equity requires tailored solutions, whereas perfect clarity requires bright-line tests, and the promotion of collaborative research remains a mix of the two. The proposed matrix approach is a hybrid solution, and perhaps a compromise, which may come closest to fulfilling all goals.

³⁴⁴ Cf. *supra* notes 211–221 and accompanying text.

³⁴⁵ See *supra* notes 38–55 and accompanying text.

³⁴⁶ See *supra* notes 38–40 and accompanying text.

³⁴⁷ See *supra* notes 38–40 and accompanying text.

³⁴⁸ See *supra* notes 38–40 and accompanying text.

³⁴⁹ See *supra* notes 38–40 and accompanying text.

³⁵⁰ See *supra* notes 174–183 and accompanying text; cf. *Ethicon*, 135 F.3d at 1469–71. The goal of equity is arguably better served by judicial case-by-case development of joint inventorship law rather than a rigid, bright-line statutory enactment.

³⁵¹ Cf. *supra* notes 218–221 and accompanying text (noting that uncertainty in the scientific community is largely driven by a lack of stable guidelines).

This approach has the benefit of providing a solution tailored in scope to the fact pattern of *Ethicon*.³⁵² If joint inventorship problems occur primarily within the researcher-technical assistant environment, then joint inventorship rules of this sort can specifically target that situation.³⁵³ In 2000, over seventy-eight percent of issued patents were assigned to one owner, typically an employer, avoiding the *Ethicon* scenario.³⁵⁴ The appropriate solution for a researcher-technical assistant environment may not be appropriate for other situations that occur in the development of patentable work under the aegis of one employer.³⁵⁵

Finally, development of joint inventorship case law also has advantages over a statutory amendment. Of the goals for joint inventorship rules discussed above, clarity seems suited to statutory reform, particularly if Congress were able to provide a definitive list of criteria for joint inventorship that would bind courts.³⁵⁶ But this approach harbors a number of pitfalls worth noting.

First, it is important to recognize that the Federal Circuit occupies a jurisprudentially unique role.³⁵⁷ In 1982, Congress created it largely because of differing standards in patent law among the federal appellate courts.³⁵⁸ The new court's charge was, and remains, to mold a uniform body of patent law.³⁵⁹ Thus, in clarifying joint inventorship standards, the Federal Circuit is actually fulfilling its assigned mission.³⁶⁰ Accordingly, Congress has already exhibited a reluctance to

³⁵² Cf. *supra* notes 152–173 and accompanying text. The twists and turns of the *Ethicon* fact pattern are not necessarily common.

³⁵³ Cf. *supra* notes 152–173 and accompanying text.

³⁵⁴ TECH. ASSESSMENT & FORECAST BRANCH, U.S. PATENT & TRADEMARK OFFICE, TECHNOLOGY ASSESSMENT AND FORECAST REPORT A1-1 (2001), <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/apat.pdf> (over seventy-eight percent of patents of United States origin granted in 2000 were assigned to a corporation). As the value of intellectual property increases in both monetary worth and prestige, and as more and more inventive work is done in a collaborative setting, many institutions, from universities to journals, are becoming more careful to order their policies towards collaborators. See also Dreyfuss, *supra* note 14, at 1184–89.

³⁵⁵ Cf. *supra* notes 152–173 and accompanying text.

³⁵⁶ See *supra* notes 305–311 and accompanying text.

³⁵⁷ See Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25; S. REP. NO. 97-275, at 2-6 (1981), *reprinted in* 1982 U.S.C.C.A.N. 11, 12-16.

³⁵⁸ See Federal Courts Improvement Act of 1982; S. REP. NO. 97-275, at 2-6, *reprinted in* 1982 U.S.C.C.A.N. 11, 12-16.

³⁵⁹ See Federal Courts Improvement Act of 1982; S. REP. NO. 97-275, at 2-6, *reprinted in* 1982 U.S.C.C.A.N. 11, 12-16.

³⁶⁰ See Federal Courts Improvement Act of 1982; S. REP. NO. 97-275, at 2-6, *reprinted in* 1982 U.S.C.C.A.N. 11, 12-16. Indeed, before enacting the 1984 amendments, Congress heard testimony recommending that the contemporary problems with joint inventorship

enact particular positive criteria for inventorship.³⁶¹ It codified only negative criteria in the 1984 amendments, even though the same cases from which it drew those criteria also contained positive criteria.³⁶² At the time, the new Federal Circuit had just begun to function and Congress wanted to prevent it from moving in an unfavorable direction based on contemporary case law.³⁶³ Now that the Federal Circuit sits with over twenty years of precedent, Congress should exhibit even greater deference to its specific expertise on this issue.³⁶⁴

Furthermore, although statutory codification of inventorship standards could embrace bright-line tests and thus provide clarity, they would inevitably appear rigid.³⁶⁵ If equity is an important goal, then a rigid system that mechanically omits or includes inventors does not appear promising.³⁶⁶ This is especially problematic when considering the myriad of plausible fact patterns that could culminate in inventive conception.³⁶⁷ Defining a single standard would be as challenging as defining conception itself and would likely bind future fact patterns to rigid criteria. It is questionable why an inventor should have to conform to any inflexible statutory standard, when the patent code already sensibly indicates that "[p]atentability shall not be negated by the manner in which the invention was made."³⁶⁸ And if the promotion of collegial and collaborative research is a goal, then a statute would have to strike a delicate balance: if the bar were set too high, collaboration would suffer as incentives to participate in group

doctrine be left to contextual court analysis. *Hearings*, *supra* note 76, at 157–58 (statement of Professor Herbert F. Schwarz from the University of Pennsylvania). Professor Schwarz, testifying before the House Subcommittee, explained: "To the extent that the proper interpretation of § 116 is not well-settled, any disagreement can be resolved by the new Court of Appeals for the Federal Circuit." *Id.* at 158. In hindsight, Professor Schwarz's approach would seem to have avoided the statutory bind the Federal Circuit confronted in *Ethicon*. *See id.*

³⁶¹ *See supra* notes 86–89 and accompanying text.

³⁶² *See supra* notes 86–89 and accompanying text.

³⁶³ *See supra* note 76 and accompanying text.

³⁶⁴ *See Hearings*, *supra* note 77, at 157–58 (statement of Professor Herbert F. Schwarz advocating that Congress defer to the Federal Circuit to create appropriate precedent on joint inventorship).

³⁶⁵ *Cf. supra* notes 76–77 and accompanying text (noting that the original 1984 amendments were codified precisely to constrain courts). On this issue, see also *Hearings*, *supra* note 77, at 157–58 (statement of Professor Herbert F. Schwarz).

³⁶⁶ *See supra* note 309 and accompanying text.

³⁶⁷ A simple review of cases cited in this Note reveals invention springing both from many years of research by engineers who may never have met, as in *General Motors*, 467 F. Supp. at 1150–51, and from a relatively benign call to a salesman, as in *Pannu*, 155 F.3d at 1346.

³⁶⁸ 35 U.S.C. § 103 (2000).

research diminished;³⁶⁹ if the bar were too low, then of course joint inventors gain nothing new.

Finally, rigid bright-line tests best serve the goal of easy administration, but not necessarily much more than a matrix approach would.³⁷⁰ A statutory amendment, then, really only satisfies one of the four goals for joint inventorship standards. In addition, overly rigid criteria, at an extreme, could run afoul of the constitutional and statutory provisions for inventorship.³⁷¹ The text of the Constitution seems to embrace a theory of natural rights for inventors, granting Congress the power to secure "for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."³⁷² In 35 U.S.C. § 101, Congress has effected that power by providing that "[w]hoever invents or discovers . . . may obtain a patent." Omitting true inventors from patents because their actions do not fit a preconceived notion of the inventive process is objectionable as antithetical to this basic principle of awarding actual inventors rights in their works.³⁷³

CONCLUSION

Currently, the law of joint inventorship provides a low and uncertain threshold for inventorship. Its vague standard fosters inequities when applied to all-or-nothing joint ownership rules, provides opportunities for dubious legal defenses, and inhibits collaboration among researchers. Ideally, fixing these problems involves modification of the rules for joint inventorship, not joint ownership. Amending the rules for joint inventorship is more practical than amending those for joint ownership and addresses both in-court and out-of-court effects. Revised joint inventorship standards should be equitable, easy to ad-

³⁶⁹ See Sung, *supra* note 15, at 421, 435; see also *supra* notes 311-312 and accompanying text.

³⁷⁰ Cf. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25, reprinted in 1982 U.S.C.C.A.N. 11, 12-16; *Hearings*, *supra* note 77, at 157-58 (statement of Professor Herbert F. Schwarz). By creating the Federal Circuit to handle patent law rather than enact uniform statutory reform, Congress seemed to choose the judicial fix over the statutory. At the same time, Congress did not seem to have any concerns about the ease with which the new court would administer the law.

³⁷¹ See U.S. CONST. art. I, § 8, cl. 8; 35 U.S.C. § 101; Fasse, *supra* note 1, at 155-56 n.13 (explaining that only actual, true inventors, as opposed to those who exploit the ideas of other, have natural rights in their inventions).

³⁷² U.S. CONST. art. I, § 8, cl. 8; see Fasse, *supra* note 1, at 155-56 n.13.

³⁷³ See U.S. CONST. art. I, § 8, cl. 8; 35 U.S.C. § 101; see Fasse, *supra* note 1, at 155-56 n.13 (explaining that actual inventors have natural rights in their inventions and reviewing framer's intent on the issue).

minister, promote collaboration, and most of all, clear. Clear standards aid collaborative, patent-producing research (the kind that Congress intended to promote with the 1984 amendments) because they allow parties to assess the potential for inventorship rights in a given collaborative environment. The Federal Circuit might effect these goals by using a matrix approach. The court can develop multiple rules for joint inventorship, as cases demand, in which the rules for determining inventorship are specific and adapted to contextual concerns, such as inventive entity, inventive context, and technical field. Such an approach is in harmony with the joint inventorship statute, Congressional intent, and public interest in the promotion of collegial, collaborative, and productive research.

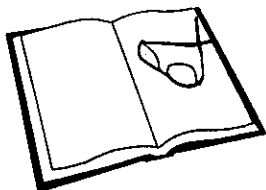
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